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RAILWAY GAZETTE**

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INCORPORATING

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DIESEL RAILWAY TRACTION

The March issue of this RAILWAY GAZETTE publication illustrating and describing developments in Diesel Railway Traction, will be ready on March 1, price 2s.

BRITISH TRANSPORT DIRECTORY OF OFFICIALS

For reference purposes "The Railway Gazette" has compiled a list of members of the Ministry of Transport, the British Transport Commission, the Railway Executive, the London Transport Executive, the Road Transport Executive, the Docks & Inland Waterways Executive, and the Hotels Executive, together with their principal officers, so far as they have been announced.

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THE RAILWAY GAZETTE

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Recruiting for State Service

A NUMBER of large banks and financial houses in the City of London, as well as big industrial organisations, have been approached by the Treasury with a suggestion that they might nominate suitable men for whole or part-time work on public boards or at other levels in nationalised industry. The men sought are between 35 and 55 years of age with financial and commercial experience, and this suggests that the Government is finding some difficulty in staffing some part at least of its increasing bureaucratic machine. It is no novelty for the Treasury and the Bank of England to be called on to nominate persons for public appointments, but it is not usual for so widespread an appeal to be made as that which has just been launched. It may be that it indicates an increasing realisation on the part of the Government of the need for business men to conduct what are commercial operations even if the former private enterprise has become State owned or part of a State monopoly.

Minister's Relations with B.T.C.

A good deal of the confusion of thought which has existed in some quarters as to the relationship between the Minister of Transport and the British Transport Commission, and through that body the nationalised transport undertakings, was dispelled by Sir Gilmour Jenkins, Permanent Secretary to the Ministry of Transport, when he spoke at a Ministry of Transport luncheon on Tuesday last. He made it clear that the Minister's powers in relation to the nationalised undertakings were much as they were before State control had been imposed. They were considerably less than during the period of wartime Government control of railways and shipping, for example; then the Minister had been charged with responsibility for operation. This had now passed, in the case of inland transport, to the British Transport Commission. The fundamental decision had been taken that transport should be run by a corporation and not, like the Post Office, by a Government department, because it must take risks and therefore was unsuitable for direct administration by the Civil Service. He agreed that there were elements of incompatibility in the relationships between the newly-socialised industries and the responsible Ministers. One arose from the fact that transport had to be run on commercial and not Governmental lines, because of the need for flexibility and initiative. There was a natural feeling, however, that because they were State-owned, Parliamentary control should be closer than it had been under private enterprise.

Acquisition of the Uruguayan Railways

As recorded in our issue of February 4, the transfer of the British-owned railways in Uruguay to the control of the Uruguayan Government became law on January 5. The text in English and Spanish of the notes exchanged last year between the Governments of the United Kingdom and Uruguay accepting the sale of the railways has been published in the form of a White Paper.* The purchase-sale agreement states that all contracts in being in Uruguay to the date of the signing of the agreement between the British companies and third parties shall be respected and honoured by the Uruguayan Government, which, nevertheless, reserves the right to denounce, at a year's notice, the contract in force between the companies and the Montevideo Trading Co. Ltd. It further lays down that all members of the staff of the British companies employed in Uruguay, whatever their rank, shall be retained in their posts by the Government, with the respective salaries or wages enjoyed at the date of signature of the agreement.

Operation Punctuality

Elsewhere in this issue, we publish the third of a series of annual notes, contributed by a correspondent, on his experiences of Brighton electric operation in 1948. He informs us that these notes cover all his up and down non-stop journeys by a variety of trains, and all journeys by the 4.45 p.m. made

* "Exchange of Notes between the Government of the United Kingdom and the Uruguayan Government accepting the Agreement of Sale of the British-owned Railways in Uruguay." Cmd. 7629. H.M. Stationery Office. Price 4d.

by him during the year, in all types of weather. It certainly is remarkable that, in the course of the 26 up journeys, only two arrivals should have been more than 1 min. 4 sec. late, one of them only 1 min. 5 sec. in excess of that figure, and the other due to a mechanical defect, the first experienced in 200 journeys. Omitting the journey delayed by this mishap, the other 25 were completed, on an average, $\frac{1}{2}$ min. before time. In the down direction, no train was more than 3 min. 40 sec. late by the working time book, or 1 min. 40 sec. over the public timetable schedule. The net times show commendable achievement by motormen in regaining time lost, the best in the up direction being only 51 min. 48 sec. for the 50.9 miles start to stop, strictly-observed speed restrictions notwithstanding. The more exacting 4.45 p.m. booking, as between East Croydon and Haywards Heath, produced an average net time—for 20 journeys—only $\frac{1}{4}$ min. in excess of even time start to stop. Thus, the high standard of operation in previous years is not only being maintained, but also surpassed. When considering the record of punctuality, it should be remembered that it was achieved with pre-war schedules, and, in the case of the 4.45 p.m., a faster than pre-war booking.

* * * *

New Swiss Tourist Office in London

Negotiations are being conducted with a view to agreeing currency allocations for British visitors to Switzerland, and the long and friendly relations between the two countries encourages the hope of an early and favourable outcome of the conversation. It is nearly half a century since the Jura Simplon Railway Company opened a tourist office in London. In 1902 this was taken over by the newly-created Swiss Federal Railways, and shortly afterwards the office was transferred to 11B, Regent Street. Although all tourist travel came to an end in September, 1939, with the outbreak of war, the office was maintained with a reduced staff, and after the end of hostilities the demand for holidays in Switzerland was so great that the office accommodation became inadequate. It was decided, therefore, to take new premises at 458, Strand, W.C.2, and on December 1 of last year the Administrative Section of the Swiss National Tourist Office & Swiss Federal Railways moved in, leaving the Booking Office and Ticket Department in Regent Street. As from Monday last, the whole organisation has been brought within the Strand premises, which are attractively designed in a modern, practical style.

* * * *

Holiday Guides

Perhaps the most popular publications of the main-line companies before the war were the four holiday guides—"Holidays by L.M.S.," "Holiday Handbook," "Holiday Haunts," and "Hints for Holidays"—which vied with one another in attractiveness of presentation. Now the guides themselves have been united to form the British Railways Holiday Guide and subdivided, according to Region, into five volumes, which are now appearing. The London Midland, Western, Southern, and Scottish Regions have a volume apiece, but the Eastern and North Eastern Regions form a single volume. The high standard of former years has been maintained in layout, letterpress, and illustrations. We wonder, however, whether it would not have been better to bring out the new guides according to geographical regions rather than railway Regions. This does not apply, of course, to Scotland, where, because of unification, the tourist now has the whole country in a single volume, but Wales, and the South-West, well-marked geographical entities, still suffer from the disadvantage of being divided between two guides, to the dismay of the holiday planner ignorant of Regional boundaries.

* * * *

The Channel Tunnel Scheme

The statement to a Joint Committee of both Houses of Parliament by Sir Herbert Walker on the practicability and estimated cost of constructing the Channel Tunnel (reported in our December 10, 1948, issue), had a sequel in the recent visit to London of Monsieur C. Pineau, the French Minister of Public Works, Transport & Tourism. At a luncheon given

in his honour by the International Road Federation, it was urged that the construction of the tunnel should be undertaken, and that it should be made available for both railway and road traffic. Mr. Alfred Barnes, Minister of Transport for Great Britain, emphasised that he was present at the luncheon solely as a friend of the French Minister, and not as a supporter of the Channel Tunnel. He added that in most European countries the roads were no longer suited to the needs of modern traffic, and that circumstances prevented arrears of maintenance and new construction from being undertaken. Captain M. Bullock, M.P., Vice-Chairman of the Parliamentary Channel Tunnel Committee, said that the scheme was not visionary, and expressed the hope that the Committee on European Unity would soon put the question on its agenda.

* * * *

Assessing the Durability of Paints

The importance of rapid and accurate means of assessing paint durability is generally recognised. Hitherto, paints have been chosen and accepted largely on the basis of chemical analysis, but, because of the widening range of complex raw materials used in paint manufacture, this practice is less satisfactory than before. Hence, the increasing use of performance tests, such as measurement of extensibility, scratch hardness, gloss, opacity, and water resistance. These tests, however, can be misleading as they have to be applied to paint films which have not aged sufficiently to attain a condition of relative stability, and also, it is not possible yet completely to correlate physical properties with durability. Therefore, the Paint Laboratory of the London Midland Region of British Railways, which we described some months ago, has spent much time in developing a system of accelerated weathering tests to assess paint durability, and elsewhere in this issue we publish an account of a new weathering machine manufactured by a Scottish firm to the specification of the railway laboratory, preceded by a description of exposure and other tests.

* * * *

Stabilising Signalling Frequency

When the development of signalling for electric railways necessitated the adoption of devices operated by alternating current, sometimes selective as to frequency, it was assumed that the periodicity of the power supply would remain practically constant and that the relay and circuit designer could take that for granted. During the recent war, however, the difficulties associated with the maintenance of generating plant and the altered demands for power led to considerable drops in frequency and gave rise to signalling failures during peak load hours, usually coinciding with heavy railway traffic. These failures, although on the safe side, had the most troublesome effects. These frequency variations are still with us, and to counteract their adverse influence the Southern Region has installed two types of stabiliser, described in this issue, which maintain a constant 50-cycle signalling feed, although the frequency of the Grid supply may vary to some extent. The stabilisers have been produced by electrical engineers of the Southern Region in conjunction with the General Electric Co. Ltd. and the English Electric Co. Ltd.

* * * *

Gas Turbines for Rail Traction

The basic principles of the gas turbine and an account of recent progress in its adaptation for rail traction, were the subject of a paper by Mr. A. W. J. Dymond, Assistant to the Chief Mechanical Engineer, Western Region, to British Railways, Western Region, London Lecture & Debating Society, on February 17. Commenting on the relative merits of steam, diesel, and gas turbine, Mr. Dymond said he considered that despite cheaper first cost, the steam locomotive seemed to be approaching its demise, because of low efficiency and relatively poor overall availability. The diesel at present had the advantage of proved success, and its overall efficiency was more than could be achieved with certainty by the turbine, though its big drawback was the expensive maintenance entailed, and first cost of a diesel, especially in the higher horsepower, appeared to be distinctly greater than for the corresponding

turbine. The possibility of using a gas turbine would rest on its justifiable claim to require substantially less in maintenance and to be lighter and smaller than the diesel. His tentative view was that the gas turbine, despite its greater first cost, may supplant the steam locomotive, especially for higher duties, and may prove a formidable rival to the diesel, despite a slightly lower thermal efficiency.

* * * *

British Transport Commission's Operations in 1948

ON other pages this week we print a summary of the last set of *Transport Statistics* for 1948. The 13th number of the series is of special importance because it contains aggregate figures for the 52 weeks to December 26. We dealt with traffic receipts on January 14 and will therefore confine this article to a review of operating results during the first year of Government ownership of transport.

Passenger travel, taking the statistics for British Railways first, was on a downward grade throughout 1948, the number of journeys originating being 7 per cent. below 1947. In the North Eastern Region the decrease was no less than 19 per cent., owing to exceptional local conditions, and the Western Region also did badly with a decrease of 10 per cent. After September, the introduction of excursion, weekend and cheap day tickets checked the fall in the volume of travel, but reduced the average receipt per journey. On the other side of the account, working expenses must have been higher as 3 per cent. more coaching train miles were run.

Freight tonnage originating was 7 per cent. above 1947, but the increase was entirely in minerals and coal. Merchandise forwardings decreased by 405,000 tons, or 7 per cent., but were high compared with pre-war years. Thanks to the exceptional activity of its heavy industries, the North Eastern Region originated 4.5 per cent. more merchandise, 19.5 per cent. more minerals and 11.8 per cent. more coal. Its net ton-miles were up 10.6 per cent., about twice the rate of increase for all Regions.

There was an increase of 4.7 per cent. in freight train mileage. In the North Eastern Region the locomotive stock must have been hard pressed, as nearly 8 per cent. more miles were worked, almost a quarter of the increase being empty mileage. The Region loads most of its minerals and coal into hopper wagons with bottom doors, which cannot be used for return loads. Largely for that reason 18 per cent. of its freight train mileage is empty, whereas the proportion for all Regions is 14 per cent. This peculiarity accounts in part for the North Eastern Region having an average train load of only 136 tons to set against the record peacetime load of 155 tons for British Railways. This advance of 27 per cent. on the 1938 train load of 122 tons was due to high averages of 171 tons for the Eastern Region, 169 tons for the London Midland Region and 163 tons for the Western Region. The sparse traffic on many long sections of line in the Scottish Region restricted the load there to 118 tons.

In 1948 freight train engines were in traffic for nearly 3 per cent. fewer hours than in 1947. The North Eastern and Scottish Regions alone kept their engines out on the line for longer hours. That was somewhat surprising as all Regions, except the Southern, worked more wagon miles, the total excess being 84,300,000, or 1.9 per cent. The North Eastern Region made good use of its locomotives, working 259 wagon miles per train engine hour. That compares with figures of 205 for the London Midland Region and 223 for the whole of British Railways.

Freight train speed was slightly better throughout the year, but even in summer did not reach 9 m.p.h. Passenger steam trains did not reach 14 m.p.h., but passenger electric trains were raised from June onwards to the satisfactory average speed of over 19 m.p.h.

Over 13,800,000 tons of locomotive coal were consumed, about 30,000 tons more than in 1947. Consumption per engine mile varied from 59.9 lb. in August to 66.89 lb. in February. The increase over the 1938 consumption of 52.5 lb. per engine mile is a serious matter and cannot be due to the retention of locomotives beyond their normal life, as 389 new locomotives were installed last year and 1,206 old engines were with-

drawn from service. The National Coal Board is apparently supplying much indifferent fuel at exorbitant prices.

This survey of some of the principal traffic statistics leaves a general impression that British Railways made some headway in their first year, but have a long way to go before they reach the level of efficiency maintained by the old companies before the war. In contrast, London Transport has restored the standard of pre-war performance within its circumscribed sphere almost completely. In the 52 weeks to December 26 its passengers numbered 4,596,062,000, an increase on 1947 of 305,861,000, or 7.1 per cent. Of that huge total London Transport railways carried 14.1 per cent., doing 5.5 per cent. more business by running 9.4 per cent. additional car miles. Buses and coaches moved 59.6 per cent. of the passengers and managed to carry 8.1 per cent. more people with an increase of only 4.6 per cent. in vehicle miles. Trams and trolleybuses took the remaining 26.3 per cent. of the passengers and provided 5.8 per cent. more journeys by running 3.7 per cent. extra vehicle miles. The railways earned over a quarter of London Transport's revenue, because their average fare of about 5½d. was nearly twice the average road fare, but railway working expenses are so high that road services are the remunerative branch of the undertaking.

Inland waterways originated 11,121,000 tons of traffic, an increase of 1,025,000 tons, or 10 per cent. Their carryings of coal at 5,469,000 tons were equal to the best of the pre-war years, each of the five Divisions showing an increase. The North Western Division had an all-round increase of 27.7 per cent. in traffic, but its total tonnage was no more than 1,611,000 tons. On the whole, ton-mileage varied with the tonnage; the average water transit was 17 miles in length and canal transport seems likely to remain a matter of local concern for the most part.

Nothing can be said at present about the activities of the Road Transport Executive, but it is understood that statistics of its operations will be available in the current year. Their inclusion will add to the usefulness of the 1949 series of *Transport Statistics*. We hope that, as we suggested some time ago, each number of the new series will be prefaced by a short note of any special developments. A running record of events such as the opening of a new electrified line by London Transport, the transfer of Hull and Grimsby Docks from the Railway to the Docks Executive, or changes in Regional boundaries would be helpful to an understanding of the statistics. The prefatory note might give with advantage the reason for any marked variation in particular results and might contain from time to time figures compiled for special purposes which throw light on the transport situation. The Interstate Commerce Commission publishes a commentary each month on the U.S.A. railways' results and its bulletins often make good reading. We think that a brief introduction to each number of *Transport Statistics* would be equally instructive.

* * * *

Civil Service Salaries

THE report* of the committee which was appointed under the chairmanship of Lord Chorley to advise the Government on the general level of remuneration of the higher posts of the Civil Service has suggested substantial increases in salary, and these have been approved in principle by the Government. Administrative class salaries are to be raised by amounts ranging from £1,250 to £300. Thus the salaries recommended for the administrative class are: for the Permanent Secretary to the Treasury, £5,000, compared with £3,750, and for other Permanent Secretaries, £4,500 compared with £3,500. A Deputy Secretary is increased from £2,500 to £3,250, an Under Secretary from £2,000 to £2,500, and the maximum for an Assistant Secretary is advanced from £1,700 to £2,000. These increases are to be given in gradual stages, beginning at the end of this year, and the Chancellor of the Exchequer has pointed out that the present economic situation demands "some measure of postponement."

No recommendation for specific increases in salaries of other classes is made, but it is proposed that they should, in general, maintain their position in relation to the administrative classes and that certain architectural and engineering posts should have

* Cmd. 7635. H.M. Stationery Office. 4d.

relative as well as consequential improvement in salaries. There can be no dispute that salaries in the Civil Service have lagged behind general increases in wage and salary rates in industry and the professions. The recommendations of the Chorley Committee are well substantiated and the decision of the Government to accept and implement them will receive general approval. At the same time, it cannot be overlooked that it makes still more untenable the Government policy as laid down in the White Paper on Personal Incomes rather more than a year ago. Since then the trades unions have succeeded in raising rates of pay for large sections of the community, and the transport workers are still pressing for higher pay. The stabilisation of personal incomes was linked with the freezing of dividend payments, but there has been greater adherence to the principles laid down by companies in their disbursements than by organised labour in its search for higher pay.

Railway officers are in a less fortunate position than Civil Servants. The effect of nationalisation has been to lower the ceiling to which the ambitious officer can aspire. The effective rate of pay of Members of the Railway Executive is £5,000 a year, or considerably less than was payable under private enterprise to a General Manager. It seems likely that in the future the Chief Regional Officer's level of remuneration will be substantially below that figure, and the result necessarily must be stagnation throughout the higher levels of the railway service.

Public Transport in Ireland

MR. A. P. REYNOLDS, the Government-appointed Chairman of Coras Iompair Eireann (the Irish Transport Company), as recorded elsewhere in this issue, has resigned, and has been succeeded by Mr. T. C. Courtney, Chief Engineering Adviser, Department of Local Government. Mr. Courtney was at one time a member of the staff in the Chief Engineer's Office of the former Cork, Bandon & South Coast Railway; for the last ten years he has been Railway Inspecting Officer to the Department of Industry & Commerce.

Before he vacated the Chairmanship, Mr. Reynolds submitted a long memorandum to the Minister for Industry & Commerce. In this he replies to and comments on a number of points made by Sir James Milne in his recent report on transport in Ireland. Mr. Reynolds points out that although in agreement with most of Sir James Milne's views as expressed in Part 1 of the report, where he deals with the requirements for an efficient and economical transport system, his statement that "Railways afford the most economical transport for the conveyance of long-distance passenger traffic" is true only if there is sufficient density of traffic. Except for short periods during the summer there is not sufficient density of passenger traffic in Ireland to make the railways an economical form of transport. Mr. Reynolds declares that the public will not travel by rail if there is any other form of transport available, and members of the Government, even on official business, do not use the railways. He gives instances of sports meetings at which special railway facilities have been offered, but the public still used road services to attend them.

Mr. Reynolds deals very briefly with the pivotal suggestion in Sir James Milne's report, which was for the establishment of a Central Highways Authority to which all forms of transport would contribute and which would provide a means of equalising track costs. He comments that a similar proposal was rejected in England before nationalisation "and it seems an elaborate way of subsidising railways. Will it not be much easier and cheaper (if subsidisation is the solution to the problem) to hand to the railways from the Central Fund the proposed new duty of 2½d. per gal. on petrol and oil?"

With Part 4 of the report, which is concerned with Coras Iompair Eireann, Mr. Reynolds deals in considerable detail. Before taking up the individual items criticised by Sir James Milne, Mr. Reynolds replies to criticism of the procedure at board meetings of the company and says that Sir James Milne seems to have overlooked the fact that the Chairman of the company devotes all his time to its affairs and is in attendance all day and every day at the offices. No expenditure is allowed without the sanction of the board.

Among a number of other points Mr. Reynolds makes

are that it is incorrect to suggest that diesel-electric locomotives have a performance which is untried and that the estimated operating cost given in the report is inaccurate and out-of-date; he feels that it would be impossible at this late stage to effect a cancellation of the contract, and he maintains that up-to-date and accurate figures indicate clearly that considerable economy would accrue, after providing for interest on the increased capital cost, by operating these instead of equivalent capacity steam locomotives. He is prepared to argue the case before any impartial tribunal that the retention of branch lines is neither necessary nor desirable in the public interest; that they do not provide convenient access to outlying districts, and the permanent way on these lines was so neglected before the formation of C.I.E. as now to require too high a capital expenditure to put it in order. There are no scheduled long-distance bus services running parallel to the railway, and the number of towns and villages served on any particular route by both bus and train is limited.

Railway Improvements in Sierra Leone

IN 1898 the first short section of the Sierra Leone Government Railway was constructed. Subsequently it was extended piecemeal until in 1914 it consisted, as it does today, of a 310-mile 2 ft. 6 in. gauge system. The main line runs from Freetown, on the coast, via Bauya Junction (64 miles), Bo (136 miles), and Hangha (187½ miles) to Pendembu (227½ miles), near the French Guinea frontier; there is also an 83-mile branch from Bauya to Makeni. The railway was built as a pioneer line, and so low prime cost was the major consideration. As a result, it was constructed as nearly as possible as a surface line, despite the fact that this entailed a switchback gradient profile with ruling grades of 2.56 per cent. (1 in 39) against up trains, and 1.78 per cent. (1 in 56) against the heavier downward loads, with inadequate compensation for curvature. As 17-deg. (5-ch.) curves were freely used, the equivalent grades when fully compensated, at the rate of 0.05 per cent. per deg. of curvature, work out at 3.43 per cent. (1 in 27½) in the up direction and 2.63 per cent. (1 in 38) in the down.

Traffic has increased from time to time and the latest available figures show that over the section where it is heaviest—between Freetown and Bauya—almost 56,000 tons are carried in the down direction annually, but the corresponding upwards tonnage is only a little under 16,000. The downwards traffic in particular has therefore taxed operation seriously, notably on the ruling grades on which many 5-ch. curves occur. Consequently, operational costs have been unduly high, and the railway, instead of paying its way, has had to be subsidised from the outset by grants from the general funds of the colony to the tune of £2,350,000 in aggregate.

To ascertain how the railway finances could be placed on a sounder footing, investigations were initiated before the recent war, and the situation was fully reviewed in 1941. It was not until 1946, however, that arrangements could be made for a thorough survey of the needs of the line to be undertaken. Mr. H. Gatford, B.Sc. (Hons.), M.Inst.C.E., formerly of the East Indian Railway, was then appointed to conduct this survey and recommend what engineering improvements could be made to facilitate the operation of the railway on its present gauge. He has now compiled a valuable and comprehensive 89-page report—illustrated by many folding diagrams—dealing with the improvement of the more important sections of the line, namely between Freetown—or rather Clinetown, its proposed new terminus at the deepwater quay, now under construction—and Bo, and the first five miles of the branch from Bauya junction. The 136-mile section to Bo is divided into two engine-runs, Clinetown to Bauya (64 miles) and Bauya to Bo (72 miles).

Briefly, the report shows that of these 136 miles, no fewer than 122 miles should be realigned, and 1½ miles reggraded on the original alignment, so that the ruling grades may be reduced to 1 in 60 against up trains and 1 in 66 against down traffic, these grades being fully compensated for curvature. If these improvements are effected, a considerable increase in engine loads will be possible, and, as a result, train mileage can be reduced; it is estimated that this reduction will effect

an annual saving of approximately £17,500. So long a length of realignment to secure considerably easier grades might be expected to increase the overall length of the line appreciably, but, on the contrary, the survey proves that there will be a reduction of nine miles in total length.

Moreover, a number of other minor improvements will be secured on this section by the realignment, notably reductions of over 1,700 ft. in aggregate rise and fall, and of nearly 18,000 deg. of curvature. On the five-mile length of the branch line investigated, about 80 ft. of rise and fall and 640 deg. of curvature will be saved by its realignment, as well as 1.15 miles in length. On the basis of (a) an average of 6, 5, and 1½ trains each way daily on the two main-line engine-runs to Bo, and on the branch line, respectively, and of (b) actual operating expenses in 1947, it is estimated on the universally-accepted reasoning enunciated in Wellington's *Economic Theory of Railway Location*—the railway surveyor's "bible," on which the report is mainly based—that the reduction in rise and fall will effect a yearly saving in cost of operation of about £24,000, that the reduced curvature will save £32,000, and that the shorter length will reduce expenditure by £8,000 annually. The total saving, including the £17,500 saved by easing the grades and curves, therefore, comes to nearly £82,000. Such an annual saving is estimated by the application of accepted principles, to justify the expenditure of a capital sum of just over £1,000,000 if this can be borrowed at 3 per cent, and repaid in 20 years.

The estimated cost of the realignments envisaged is only £484,000 if mechanical equipment is used in the construction work. In addition, the regrading on the original alignment is expected to cost £3,000; the provision of an extra sleeper per rail length—considered necessary to secure satisfactory results—will cost £15,000; and the survey work and superior supervision of the engineering works £48,000. The total capital outlay involved should, therefore, be only £550,000, which could be repaid in about 10 instead of 20 years, at the rate of borrowing quoted.

The improvements recommended are thus shown to be justified, and, in addition, other advantages will accrue, such as increased speeds and improved wagon turn-round. Furthermore, increasing chrome ore traffic from Hangha, with a 185-mile lead to Clinetown, should justify even greater improvement in the ruling grade. As a matter of fact, further investigations, arranged by Mr. Gatford, are being carried out beyond Bo and up to Hangha, with this end in view, and also on the branch line. Great credit is due to Mr. Gatford for conducting all these investigations, especially as he was assisted by very scanty trained staff, and the survey work had to be carried out in exceedingly heavy bush, through which the railway runs. Incidentally, this and the hostile attitude of the natives when the line was originally surveyed may be assumed to be largely responsible for there being so much need for subsequent improvement. Mr. Gatford's exhaustive and conclusive report may well prove valuable as an indication of possible improvements to other cheaply-constructed pioneer lines, subsequently called on to carry heavier traffic economically. We are indebted to the Crown Agents for the Colonies for sending us a copy of it.

Automatic Couplings for European Rolling Stock

THE Inland Transport Committee of the United Nations Economic Commission for Europe adopted, during its third session held at Geneva from October 25 to 29, 1948, among other resolutions, one requesting the International Railway Union (U.I.C.) in Paris to reconsider the important problem of adopting automatic couplings in place of screw couplings on new rolling stock on the European railways. The introduction of automatic couplings was studied by the U.I.C. before the war, with the active support of the International Chamber of Commerce, and the International Labour Organisation. Resolutions in support also had been passed by other international organisations, and by the national and international railway workers unions, and there appeared to be unanimous agreement that the automatic coupling was desired. When the war broke out, the technical investigation

undertaken by the U.I.C. had reached the stage at which it was proposed to try out types of couplings on one railway system, so that a standard fitting could be adopted, after the financial problems of the change-over, and the transition period of dual coupling, had been settled.

During the war, the Technical Advisory Committee on Inland Transport (T.A.C.I.T.), sitting in London, considered that, as it was certain that a large proportion of European rolling stock would be lost, and much new stock (and especially wagons) would be needed when the war had ended, the time had come to agree a design which would allow automatic couplings and central drawgear to be fitted subsequently, without alteration to the underframe. This was again strongly supported by the I.L.O., and this recommendation was accepted by the member governments. It was not implemented, however, except for the utility wagons designed under the auspices of T.A.C.I.T., and supplied by U.N.R.R.A. only to railways in Eastern Europe.

Further efforts by E.C.I.T.O. (the successor of T.A.C.I.T.) remained unheeded, as did a resolution adopted by the Inland Transport Committee of the I.L.O., passed in December, 1945, at its session in Montreal. It is this last resolution of I.L.O. that has now been taken up by the Geneva committee, and has formed the basis of the resolution of this body. Now that large numbers of wagons are to be built, it is to be hoped that such an obviously sound proposal will be adopted.

The Changing Face of the Southern

UNDER this title, Mr. R. A. Savill, Hon. Assistant Secretary (Publicity), British Railways (Southern Region) Lecture & Debating Society, has compiled and produced a paper which will be of the utmost value to the railway historian. It lists the many changes throughout the late Southern Railway system and its constituents affecting the opening, closing, and renaming of stations. In general, only changes which have occurred during the last fifty years are given, but earlier features where of interest or necessary to complete the picture have been included.

Stations on the Southern itself (excluding the East Kent, West London Extension, and the Lynton & Barnstaple lines) which have been closed in the last fifty years total 23 for the Central, 36 for the Western, and 47 for the Eastern Sections, with four more on L.S.W.R.-L.B.S.C.R. and L.B.S.C.R.-S.E.R. joint lines. In some cases these have been reopened under fresh names, on new sites, or as halts, but many were shut for ever after the 1923 grouping had made them redundant.

The impact of tram and, later, bus competition is shown in the melancholy list of inner suburban stations closed in the first two decades of this century. Even the introduction of rail-motors and the establishment of many "halts," particularly on the L.B.S.C.R., did little to stave off the assault of the road vehicle. Some of the halts survived, however, and a few, with electrification, have developed into full-blown stations.

The effect of agreements and amalgamations on station names is apparent, as, to choose an early example, at Bromley, where after the S.E.R.-L.C.D.R. working union of 1899 it became necessary to differentiate between the two stations of the former rival companies. Ash and Mottingham, two South Eastern stations, hold the record for name changes—four.

Some of these bewildering alterations reflect the rise or change in status of a locality. Hove was served originally by a station of that name (where Holland Road Halt now stands) from the opening of the Brighton-Portsmouth line in 1840, but this was closed in 1879 and replaced by a new station further west called (with an odd suggestion of the "classy" part of a popular Kentish resort) Cliftonville. In 1879 this was re-styled "West Brighton," but in 1894 the idea of being considered a mere appendage of London-by-the-Sea had become sufficiently distasteful to the inhabitants of Hove, by then a fashionable resort in its own right, as to dictate a reversion to the original name.

It is pleasant to record that since 1927 the Southern has opened or re-opened 41 stations—13 on the Central, 12 on the Western, and 16 on the Eastern sections, and in most cases this has been as a result of the introduction of electric services. The author of the paper will welcome the pointing out of any omissions noticed.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Military and Railway Appointments

69, Lumb Lane, Roberttown,
Yorks. February 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I have read with considerable interest your comments in your January 14 issue, on the appointment of a distinguished but retired General to a seat on the Railway Executive as successor to another General.

I am wondering if there is any prospect of a two-way traffic in these matters. It is understood from your columns that the Chief Commercial Manager of the London Midland Region is shortly to retire from Euston at the age of sixty. May we expect to hear any day that he has been offered a post at the War Office with the rank of Field-Marshal?

Yours faithfully,
G. W. ELTHERINGTON

Protecting Rolling Stock from Corrosion

Winn & Coales Limited,
Terminal House,
Grosvenor Gardens,
London, S.W.1. February 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—We have pleasure in informing you that our Belgian Associates, Bureau de Représentations J. Trachet, have received orders from the Belgian, French, and German Railways and coach and wagon builders for large quantities of their "Denso" anti-corrosive tape for the protection of wagon chassis members, and that also we have received large orders for a similar purpose from British Railways.

We consider this a matter of general interest, as proved by the numerous inquiries we have received in response to our recent advertisements in *The Railway Gazette*. Each displayed a keen interest in our method of protecting the chassis members, and it is apparent that corrosion does present a serious problem to all concerned in wagon maintenance.

Yours faithfully,
E. A. WEBB

Train Control in the Netherlands

Nigerian Railway,
Ebute Metta, Lagos,
Nigeria. February 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I was most interested in the article published in your issue dated December 31 last, page 757, and headed "Some Features of the Netherlands Railways."

When reading through the article I felt that Mr. H. L. Collins might be interested to know, and no doubt other readers, too, that the Royal Engineers were responsible for the introduction of train control by means of the graphical system on the Netherlands Railways. The facts were as follows:—

In November, 1944, the 952 Rly. Op. Coy. R.E., under the capable command of Major W. Underwood, was given the task of reopening and operating the lines north of the Belgian border which had just been liberated.

The advance party, of which I was a member, moved into Tilburg (Brabant) on or about November 22, and there proceeded to set up headquarters in preparation for the opening of the lines Antwerp-Tilburg via Roosendaal and Breda, also the single line from Belgium through Turnhout, crossing the frontier at Weelde and up to Tilburg.

To relate the complete details would make it too lengthy for this letter, although it would make most interesting reading matter for our interested railwaymen, but it is sufficient to say that the first train control was set up at Tilburg in early December, at first in an old office behind the disused loco. shed and later in the refreshment room on the station platform.

Our Dutch friends did not like the idea at first, and although they did do all in their power to help, even posting staff for training, they always did give the impression that it would be discarded on our departure.

I am happy to know that it has been retained, even if in a simplified form, but no doubt this was due to the prohibitive cost of printing graph paper which did seem to alarm our Dutch friends, more so when they could not see at first the benefit to be gained by the system.

I understand that before the war the guards' journals were the only means whereby headquarters could form some idea how trains were running, and this only after the delay of a few days.

I look forward in the future to being able to pay a return visit to Holland and once more to travel on the Netherlands Railways system, perhaps to meet in happier circumstances the good railway friends made in 1944.

With best wishes to *The Railway Gazette* from a reader in Nigeria.

Yours faithfully,
A. M. MACDIARMID,
Assistant Traffic Officer

Passenger Fares

5, White Cross Villas, Hull Road,
York. February 8

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—Your correspondent's article on "The Problems of Railway Passenger Fares" in your issue of January 28 raises a number of controversial points.

The advocates of nationalisation may have made the usual extravagant "election campaign" promises—which have been not altogether fulfilled—but nationalisation cannot fairly be blamed for the present "higher fares to increase revenue" policy. The B.T.C. and the Railway Executive, presumably are advised for the most part by the same railway staff who, however misguided, would have influenced rates and fares policy under private enterprise.

Rail fares are high not only by comparison with bus fares, but also in relation to (a) the present capacity of the public pocket, bearing in mind that rail travel is one of the first items in a domestic budget to be "axed" when economy has to be studied; and (b) the level of charges which could be achieved, with profitable operation, if rail passenger services were working to full instead of only half capacity.

The reasons given by your correspondent for the bus companies' ability to keep down fares and yet pay good dividends are not questioned, but it would be well to add that the road firms have been subsidised further by provision of roads, signalling facilities, and often "station buildings," out of public funds. The necessity for adjusting matters between road and rail in this respect was set out in a pamphlet issued by the L.N.E.R. in 1946, which appears to have had scant recognition.

The study of fares in London is interesting, but the London transport problem is complex and abnormal and must not be allowed to influence a decision on transport fares in the country as a whole.

The increase in revenue which has resulted from the last rail fares increase—apart from being inadequate to meet increased working costs—will dwindle rapidly into a decrease unless drastic steps are taken quickly to arrest the recent decline in passenger traffic.

The assumption that a decrease in the level of rail fares would result in decreased revenue is reasonable: a 50 per cent. reduction in the general level of fares admittedly would require a 100 per cent. increase in passengers merely to equate existing revenue. But the remedy is, surely, to reduce the standard fares by 50 per cent. and adjust the various "concession" fares thereafter. When the position is examined closely the prospects are seen in a different light. Two-thirds of the passenger traffic by Railway Executives services in 1948 was carried at fares already 50 per cent. or more below standard, for example.

- (i) Services personnel travelling on free warrant on duty, privilege leave, or for demobilisation;
- (ii) Services personnel and their families on furlough bookings;
- (iii) Staff privilege passengers;
- (iv) Party and cheap day, day and half-day excursion bookings;
- (v) Season tickets;
- (vi) Workmen (in most cases).

A further quarter of the traffic was carried at monthly return fares 33½ per cent. below standard. Traffic under the first two items continues to decline rapidly with the reduction in the Armed Forces, and not enough new other traffic has been secured to fill the gap, despite the increase in population, growth of the travel habit during the war, and greater leisure from a 5-day working week. If standard rail fares were cut by 50 per cent. these concession bookings and reduced fare facilities would require a much less percentage reduction. In fact, it might well be decided that the low workmen's fares should now be withdrawn when cheap day tickets are available, considering the present level of workmen's wages compared with clerical, and other salaries. What the further reductions should be and what additional traffic then would be required to equate present revenue could be assessed in the light of results for 1948, and the competition

to be faced. Probably an overall 40 per cent. increase in traffic might be required. Bearing in mind the passenger traffic carried in 1945, a much bigger increase should be possible, and most of this could be handled with existing staff and in existing train services.

All three plans discussed by your correspondent seem to me to be incomplete. A combination of the more progressive elements of the three might be more likely to achieve success. To abolish all cheap fares except by special train would restrict development of traffic. The proposal to make a surcharge on express trains might be justifiable, though, as you point out, trains averaging more than 50 m.p.h. today are remarkable rarities.

The end of petrol rationing certainly will mean a further loss of rail passengers, which must be offset by development of other passenger traffic. But a much more immediate problem is to fill the gap caused by the inevitable decline in services duty and furlough traffic. Nothing but a drastic reduction in standard fares and development of reduced fare facilities can achieve this.

Yours faithfully,

C. AYERS

We have shown this letter to the author of the article, who replies as follows:—

Mr. Ayers's comments on my article are so extensive that to deal fully with them all would require almost as much space as the original article. I should like, however, to comment briefly on some of his points. In paragraph 2 there was no suggestion on my part that nationalisation was to blame for the present "higher fares to increase revenue" policy. In paragraph 3 (a), if rail travel is one of the first items in a domestic budget to be "axed" when economy has to be studied, surely this is just because rail fares are high by comparison with bus fares. (b) the suggestion that profitable operation could be achieved with a lower level of charges is in conflict with the admission contained in paragraph 7, namely, "the assumption that a decrease in the level of rail fares would result in decreased revenue is reasonable."

In paragraph 4, the "further subsidisation" of road firms by the provision of roads, etc., out of public funds was not mentioned in the article for the reason that comparison was simply being made between present-day and pre-war conditions. This form of "subsidisation" has existed, of course, for very many years and has been stressed by the railway authorities on numerous occasions, particularly in regard to alleged unfair road competition for merchandise traffic. In paragraph 5, to dissociate fares in the London area from those for the country as a whole would be extremely difficult and result in wholesale anomalies, so much of the railways' London suburban and outer-suburban traffic being carried over their main lines, extending in some cases to as much as 40 miles from London.

In paragraphs 7 and 8, from what source has Mr. Ayers obtained his information? So far as I am aware, the full results for 1948 have not yet been made public. In any case, Mr. Ayers appears to be including season tickets and workmen in his calculations, ignoring the fact that each of these two groups has its own "standard." In suggesting that the standard rail fares should be cut by 50 per cent., i.e., to just under 1½d. per mile third class, with presumably a similar cut in season ticket rates, and that cheap fares by ordinary train be continued, Mr. Ayers appears to have forgotten the duty placed on the Commission to make its undertaking self-supporting. Even if such drastic cuts had the effect of attracting a sufficient additional number of passengers to rail as to increase rail revenue—which in my view is extremely unlikely—it could only be at the expense of the revenue of London Transport and competing bus companies (all owned or to be owned, by the B.T.C.), as there is no untapped reservoir of potential passengers, at present static but only waiting for the introduction of low railway fares to become mobile. Mr. Ayers makes no suggestion to increase the fares by tube and bus.

In paragraph 9, the statement that to abolish all cheap (public) fares, except by special train, would restrict development of traffic, is open to question. Neither London Transport nor the "associated" bus companies, all of which have developed traffic with marked success, give reduced fares by their ordinary services to any extent; in addition, I believe, London Transport makes no reduction for return journeys except where they compete with the main-line railways or independent bus operators. Regular and frequent services coupled with reasonably cheap ordinary fares do far more to develop traffic than very cheap fares by specified ordinary trains running at irregular intervals.

The Future of the Highlands

The Railway Club,

57, Fetter Lane,

London, E.C.4. February 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article under the above heading, in your issue of February 18, serves as a reminder that a day service between London and Inverness would not be an innovation. In the summer of 1900, the Anglo-Scottish expresses leaving Euston and Kings Cross at 10 a.m. began to take through coaches for Inverness. The combined train left Perth at 8.15 p.m., and reached Inverness at 11.30. The return service started from Inverness at 8.50 a.m. and reached Perth in time for the mid-day departures for London. The through coaches, and the evening train from Perth, ran during the summer months only, but the 8.50 a.m. train from Inverness ran throughout the winter, and passengers could reach London by changing at Perth.

Unfortunately, the northbound connection at Perth was not guaranteed, and, when the trains from the South were late, passengers had to wait some four hours at that station, and continue their journey by a slow night train, due in Inverness shortly after 5 a.m. The uncertain time of arrival made the northbound service unpopular, and the Highland Railway withdrew the evening train from Perth in the autumn of 1903. On the other hand, the day service from Inverness was continued, and, despite the necessity of changing at Perth, proved popular with the travelling public.

It is to be hoped that a day service with through coaches between London and Inverness will be restored at no distant date. Your suggestion about the time of departure from London is particularly apposite, as the service (without through coaches) provided a few years before the recent war started at an inconveniently early hour.

Yours faithfully,

H. A. VALLANCE

Professional and Technical Staff

Railway Clerks' Association of Great Britain & Ireland,
25, Euston Road,

London, N.W.1. February 18

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May I ask your indulgence once again to reply to "Old Ashfordian." The figures he quotes have not been overlooked by the R.C.A. in the negotiations which are proceeding with the Railway Executive and which are expected to be concluded within the next few days. As regards "the latest R.C.A. Charter," if "Old Ashfordian" were a member of the R.C.A. he would know that the P. & T. staff were given facilities to prepare their own charter which preceded the establishment of present rates of pay, and although that charter proposed scales of pay much in excess of those enjoyed by the clerical staff, the latter gave it their full support. It has always been R.C.A. policy to give special facilities to the P. & T. staff in these matters and this practice will be followed with any new Charter which the P. & T. members of the R.C.A. may consider to be appropriate to their particular qualifications and professional duties.

The questions asked by "R.C.A. Member" in your February 18 issue can be answered only briefly in the space that you may allot to me. The former railway companies were entirely responsible for the prolonged nature of the negotiations on the original claims of our P. & T. members; they stubbornly resisted our claims, and Parliamentary action on two occasions and recourse to the Railway Staff National Tribunal were necessary before a settlement could be obtained.

Your correspondent implies that some P. & T. Staff employed by the old Southern Company suffered reductions in pay. No such case arose or was reported to this office. A full report of our negotiations following on the 7s. 6d. award has already been made to a special consultative conference of P. & T. members and a further report will be issued when the present negotiations are concluded. "R.C.A. Member" will be able to obtain full details from his Branch Secretary.

Yours faithfully,

P. T. HEADY

VISIT TO KEMSLEY HOUSE.—Members of the Railway Students' Association, London School of Economics & Political Science, visited the *Daily Graphic* and *Sunday Graphic* at Kemsley House, London, on Wednesday, February 16. The party was conducted over the editorial and printing departments, and among the various aspects of newspaper work described were block-making, linotype composition, and sub-editing.

The Scrap Heap

ANTI-SOCIAL

About once a week someone is hurt through passengers opening railway carriage doors before a train stops; 235 offenders were prosecuted last year.—From the "News Chronicle."

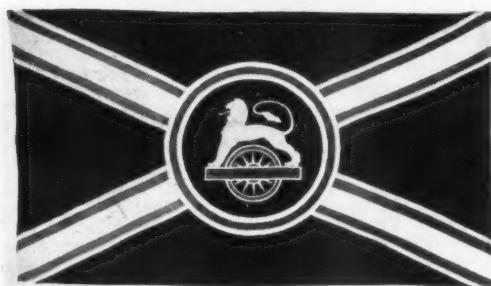
RAILWAYS SAVE STEEL, IRON, AND PAPER

The Railway Executive announces that during 1948, British Railways salvaged 657,789 tons of iron and steel (equivalent to nearly 88 per cent. of the new material received), and 4,926 tons of paper.

RAILWAY TELECOMMUNICATIONS IN U.S.A.

A survey has disclosed that 45 railways in the U.S.A. now use electronic communications equipment in yards and at termini. According to *Electronics* the analysis includes 879 portable and mobile stations, of which 93 per cent. use pure radio and 7 per cent. use inductive pick-up systems. Of the 118 fixed stations 82 per cent. use radio and 18 per cent. inductive systems. So far, 22 railways have installed equipment for routine communication with trains, 55 per cent. using radio and 45 per cent. inductive pick-up. Radio for passengers is not included in the above figures because installation is said to be increasing too fast to permit accurate counts.

House Flag for British Railways Ships



The new flag has a blue ground with white diagonals, lined red, with outer white edging

FREE FOR FORCES ?

On reading that Chatham magistrates had fined three naval men for not paying their fares on the railway, I think it is about time that the Servicemen of England had free travel at all times on the now British Railways.—W. Rickard, in a letter to the "Daily Graphic."

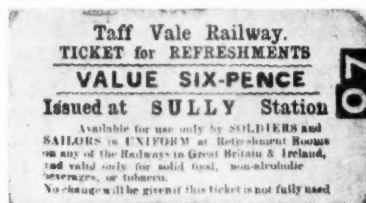
HUNT FOR THE BUFFER

The railway telegraph at Tiverton (Devon) recorded: Buffer missing from 4.15 Stop Please search.

A phone call to Exeter disclosed that the Bristol to Exeter express had shed a parcels van buffer somewhere west of Taunton. Two fast passenger trains and two parcels trains were signalled to stop. A light engine was sent out from Tiverton to check 30 miles of line. Gangs of linemen set out to search—hopelessly, in the dark. All along the line passengers, mail, and goods were held up. Then the light engine reported "Track clear" and the trains moved on. At daylight the buffer was found beside the track near Tiverton.

"An unusual accident," commented British Railways.—From "The Daily Express."

We reproduce below a ticket issued at Sully Station on the Taff Valley Railway to soldiers and sailors. The wording on the ticket states that it is available for use only by soldiers and sailors in uniform at refreshment rooms on any railway in



Great Britain & Ireland. The ticket was valid for "solid food, non-alcoholic beverages, or tobacco," and no change was given if the ticket was not fully used.

FULL SPEED TO DESTRUCTION?

Western civilisation may be compared to a conveyance rushing into the future at an ever-accelerating speed. In this conveyance sits, squats, and bobs up and down, a little two-legged animal called Man.

Three or four generations back, had I sought for a concrete example of the "conveyance," I should have written about a horse-drawn vehicle, plodding or trotting along at a speed no faster than that of the Roman, who nearly two thousand years ago drove up to his Hampshire villa near Winchester and was assisted from his chariot by an attentive slave. Two generations ago I would have written about trains and steamships; a few years ago about aircraft, and today my analogy must deal in guided missiles. During the nineteenth century the small minority of Men who have the ability and leisure to think, sat in the conveyance of their civilisation with a rather smug and satisfied expression on their faces. They pressed buttons, pulled levers, and

up went the speed of what they called Progress. Today it is a very different story. The conveyance has suddenly turned a couple of somersaults in quick succession (two world wars), but is still rushing ahead. It is showing signs of falling to bits and throwing men out of the skies to make forced landings on a hard barbaric world, which they once thought they had left for ever.

There is a great fear abroad in the world, and though it may be comparable in kind to the fear that seems to have filled the minds of thoughtful men as the Roman Empire began to subside into its foundations, the fear today is more widespread and more urgent, and rightly so. So, as I have said, many people, when they dare to think about these things, feel—and the fear is certainly present in my own mind—that our civilisation today is like a conveyance which is rushing ahead into the future at an ever-increasing speed, carrying in its disintegrating framework, a little two-legged creature, rather white-faced as he pulls levers right, left, and centre, hoping that he may be lucky enough to find the brakes, or at any rate stop the acceleration before the whole outfit grows white hot with the friction of its passage through

time and falls apart in glowing fragments.—Commander King-Hall in "The National News Letter."

NO "MICHELINES" FOR HIM

André Michelin is said to have conceived the idea of the pneumatic-tyred railway coach after a sleepless night in a wagon-lit. In the January, 1949, issue of the journal of the Bradford Railway Circle appears a case of insomnia for the opposite reason, recounted by Mr. Thomas Green, who recently entertained the Circle with his reminiscences. Years ago, in the United States, Mr. Green met by chance a man who had been a traveller for Baldwin's and used invariably to travel by night. "Having inherited a fortune he retired, only to find that he couldn't sleep without the customary lullaby of wheels upon rail joints." To cut a long story short, Mr. Green became the "Lord High Everything Else" on a circular railway which had been laid round the wakeful one's estate. On this, his chief duty was to drive a train each night, in the solitary coach of which his employer found his much-needed sleep!

100 YEARS AGO

From THE RAILWAY TIMES, Feb. 24, 1849

THE prestige, as a prophet, which attended the Chairman of the Midland Railway Company has for some time past been on the wane. His 10 per cent. dividends have long since ceased to flit before the eyes of dazzled meetings. The sure touchstone of experience has been applied in every direction; and last, but not the least, bitter revulsion must have been that which attended the avowal that the Great Northern Company would make their line. As no one can have been less sanguine than Mr. HUDSON upon this result, the whole weight of his convictions (and, looking to the interests with which he is allied, those convictions are likely to be sufficiently grave) have fallen into the other scale. If he now prophesies success to the Great Northern, it must be under the influence of an *afflatus* which he cannot resist, and which must have cost him all the agonies of Pythonic inspiration.

STATION LIBRARY

One of the strangest libraries in the world is kept at Garsdale railway station. It is reserved for the use of railway workers at this lonely Yorkshire spot: less than 10 people use the library. It was bequeathed to the staff of the station over 40 years ago by two elderly women.—From the "Leader Magazine."

Tailpiece

I love to idle by the line
And watch the trains go by.
To note the engine's number, name
The wherefore and the why.

I read the destination boards
That tell where trains are bound.
To Bristol, Swansea, Cheltenham.
And towns on Plymouth Sound.

Sometimes when in the Region (East)
I see trains on their way,
Kings Cross to Dundee, Aberdeen,
Via bridges Forth and Tay.

I do not like electric trains
They don't fulfil my dream.
Give me the ones that puff along
With lots of smoke and steam.

R. M.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Additional Estimates

The Minister of Transport recently tabled in the House of Assembly the third additional railway estimates of expenditure from revenue funds totalling £8,233,981 and the second additional estimates of expenditure on capital and betterment works amounting to £1,722,627 for the financial year ending March 31, 1949.

These additional estimates bring the total estimates of expenditure for the year to £8,223,944 from revenue funds and to £33,783,664 on capital and betterment works. Of the amount of over £8,000,000 mentioned, £2,267,317 is required for cost of living allowances which brings the total estimate under this head for the current financial year to £12,534,788. An amount of £1,256,783 is required for maintenance of rolling stock, bringing the total for the year under this head to £9,866,439.

Running expenses require a further £1,247,022 and traffic expenses £1,405,517. This brings the totals under these heads to £13,540,678 and £14,648,887 respectively for the present year. An additional sum of £277,435 is required for catering and bedding services which brings the revised estimates for these services to £2,340,735.

Of the additional capital and betterment expenditure, £358,425 is needed for construction work on the three major aerodromes at Johannesburg, Cape Town, and Durban. This sum will bring the revised estimates for 1948-49 to £1,558,425, the aerodrome construction programme having made faster progress than was expected when the original estimates were framed.

EGYPT

Separation of Railway Budget from the State General Budget

At a meeting held on January 25 in the Institute of Commerce, Cairo, His Excellency Abdul Megid Badr Pasha delivered a paper entitled "Separation of Railway Budget from the State General Budget." Badr Pasha read his paper in the Institute to give those interested in transport the opportunity of expressing their views in a free atmosphere. The Ministers of Finance and of Communications, and the Under-Secretary of State, Ministry of Commerce & Industry, were among those present.

The speaker began by referring to the report of a former Under-Secretary of State, Ministry of Finance, as a result of which the railway budget was separated in 1933. The Government decided in 1940 to revert to the old arrangement on the plea that no satisfactory results were obtained from separation. Badr Pasha produced financial results and explained that the reason why results were considered by the Government as unsatisfactory was that the Government over-estimated the capital value of the railway assets and fixed the Government share on a basis of 25 per cent. of the gross receipts in preference to interest at a reasonable rate on the actual capital value. This, of course, resulted in total expenditure exceeding total receipts.

Badr Pasha stated that he recently discussed with the Under-Secretary of State, Ministry of Finance, the reversion to

separation against fixing 2.5 per cent. interest of capital value for Government share. Until detailed arrangements for separation are completed and approved by the Government, Badr Pasha will propose strengthening the powers of the Railway Board. The aim is to exempt railways from Government routine and enable them to be worked on more economical and commercial lines.

The Under-Secretary of State, Ministry of Commerce & Industry, supported these views and hoped that the scheme would enable railway authorities to encourage co-operation with other means of transport, instead of harmful competition.

New Locomotives

Out of the 32 locomotives contracted for with the North British Locomotive Company 12 have been delivered recently at Alexandria.

INDIA

Delhi—Mathura Line Doubled

One of the worst bottlenecks on Indian railways during the last twelve months has been the portion of the G.I.P. line between Mathura and Delhi. As most of the imported traffic for northern India was diverted from the port of Karachi to Bombay, the B.B.C.I. and G.I.P. lines between Bombay and Delhi had to carry goods in increasing quantities for consumption in Delhi, the United Provinces and the Eastern Punjab. From Mathura, where the lines meet, there is a single track to Delhi, doubling of which has been in progress for the last eight months; the first stage of the work is about to be completed. This consists of doubling between Ballabgarh and New Delhi, approximately 23½ miles; stage two consists of doubling the rest of the track, about 66½ miles; stage three plans the building of a new marshalling yard to provide relief for Delhi and New Delhi yards, which are overstrained.

Stage one has been completed against heavy odds, because the section to be doubled was at the end of a busy line and operating needs had to be carefully watched in arranging necessary blocks for unloading materials at sites of various bridges. Considerable difficulties had to be faced in working to the time schedule. The monsoon adversely affected the progress of the work, as it flooded several areas and caused a serious setback in the work on bridges because of flooding of foundations, which had already been excavated. The Hyderabad and Kashmir operations also meant additional civil and military traffic on the section, as the special trains carrying these had to be given the highest priority.

UNITED STATES

Philadelphia Underground Construction

A new underground line is being constructed in Philadelphia at an estimated cost of \$40,000,000. It will run from the existing tunnel already built under the Schuylkill River as far as 40th Street in the first instance, and thence to 63rd Street and onwards into Delaware County. Part of the first section will run along under Market Street, where it will be immediately below the existing high-speed elevated line. As construction excavation, now in hand, has to be carried out without interruption of elevated traffic, the

engineers were faced here with a delicate problem. The steel columns supporting the elevated tracks are founded on concrete piers, between and below which the excavation for the underground is in progress. Other means of supporting the columns, including transverse girders, have been devised, as a temporary measure, and the work is proceeding satisfactorily. A brief description and a map of the Philadelphia subway-elevated system appeared on page 132 of our January 20, 1948, issue.

1949 Railroad Fair

This year the Railroad Fair at Chicago, which last year attracted more than 2,500,000, will open on June 25 and remain open until October 2. The 50-acre site will be improved and the 5,000-seat grandstand enlarged. Among the other improvements planned is the expansion of the popular "Deadwood Central" miniature railway.

ARGENTINA

Accident on Electric Line

On December 19, 1948, 45 persons were killed and 6 injured when an electric train of the General Mitre Railway ran into a lorry carrying a number of intending picnickers. The lorry driver lost control on a steep hill and could not avoid crashing through level-crossing gates at the moment when the electric train was approaching.

Fraudulent Practices Discovered

Recent investigations on the General Bartolomé Mitre Railway brought to light irregular practices on the part of dining-car staffs, principally on the Buenos Aires—Córdoba expresses. These men, when receiving supplies of beer and soft drinks for the dining-cars, bought additional quantities for their own account, and sold them to passengers during the journey, keeping the profit for themselves. Other irregularities in connection with the payment for meals on the trains were also discovered. The men concerned were arrested by the police. Booking clerks of the same railway were arrested recently in Córdoba in connection with the sale of blocks of reserved seats to outsiders, who then resold them to the public at greatly increased prices.

Uniform Rates and Classification for Goods, Livestock, and Parcels

The Transport Secretariat appointed some months ago a special committee to study, revise and co-ordinate all transport rates and charges. Sub-committees were formed to deal with those relating to each particular form of transport, and, taking into account the fact that railway transport was the most important from every standpoint, it was decided to make the new railway rates system the basis on which the whole structure was to rest. Consequently, the terms of reference of the Railway Rates Sub-Committee were that the new system of charges, taken as a whole, should provide sufficient revenue to cover the cost of operation of the railways, and provide a modest profit.

The plan under which the work was carried out meant many weeks of intensive labour, meetings almost daily, and an enormous amount of study, calculation, and clerical work. As the plan progressed, adjustments of varying importance were made in rates, charges and conditions of transport, but the final objective was the compilation of a new Basic Rates & Classification Book to replace the 19 separate books then in existence on

the different lines. This book having now been approved by the Executive Power, the scales of basic rates and the new uniform classification of goods, livestock, and parcels contained therein have been put into force as from February 1 on all the railways in the country. Although new basic maximum passenger fares have been established, the existing special passenger rates are remaining in force for the time being, and new special rates, lower than the maxima rates, will be issued in the near future.

To aid users of the railways in distant provinces and bearing in mind the long hauls customary in Argentina, rates have been designed on the parabolic principle, providing for a progressively decreasing rate per km. as the distance increases. The so-called "mountain rates" of the ex-State Railways, which called for higher charges in mountain districts by means of artificially augmented distances, have been abolished.

The new rates and fares are applied independently on each railway, but the eventual aim is to develop a rates structure which will provide for the application of through rates between any two points on the Argentine railway system. Each railway will continue to have its own

Special Rate Book, in accordance with the requirements of its principal traffics, and this will mean that in practice the uniformity of charges will not be absolute.

Abolition of Children's Tickets

As regards passenger rates, one of the interim resolutions recently taken is the suppression of children's half-rate tickets. In future, children under 5 years of age will travel free without the right to occupy a seat, and those of five and over will be required to buy tickets at the full adult rate.

ITALY

Rome Termini Station

Before cessation of work in 1943 as a result of the war, the two wings of the new central or Termini station in Rome were completed. Construction on the central block has been resumed and it is hoped that the whole structure will be finished next year. It will accommodate both ordinary station facilities and extensive offices.

New Station Building at Reggio Emilia

The new station building at Reggio Emilia, on the Milan-Bologna main line,

41 miles north-west of Bologna, is being inaugurated this month. The new station rests on the foundations of the old station building which was destroyed in an air raid on January 7, 1944, but it will be one storey higher.

ALBANIA

Locomotives and Rolling Stock from the Soviet Union

According to a message from Moscow, the first Soviet cargo ship to call at an Albanian port this year arrived at Durazzo on January 13 and unloaded a number of locomotives, carriages, and wagons built by the Russian railway industry to the order of the Albanian State Railways.

In addition to the 26-mile standard-gauge line running between Durazzo and Pecinj (a description of which was published in our April 16, 1948, issue), which was built in co-operation with the Yugoslav State Railways and opened on November 7, 1947, the 18.6-mile standard-gauge line between Durazzo and Tirana, the capital, should have been opened by the end of 1948. No confirmation has been obtainable, however, as to the actual completion.

Publications Received

Carbon Pile Resistors.—This leaflet describes the Morganite carbon pile, a resistor manufactured by the Morgan Crucible Co. Ltd., in which the resistance can be varied by mechanical pressure. The smooth and continuous adjustment made possible over a wide range of values has led to its application in voltage regulators for use in railway train lighting and air conditioning, and in diesel-electric locomotives. Other interesting applications are in radio equipment and motor speed control of battery-driven vehicles. The pile consists of a stack of carbon plates or discs assembled so that the contact pressure between them can be varied, as action depends on the fact that the contact resistance of contiguous pieces of carbon is sensitive to pressure.

British Railways Holiday Guide (London Midland Region).—The London Midland Region serves some of the grandest scenic districts of England and Wales, ranging from the Peak to Lakeland and Snowdonia, but it also includes many "popular" resorts, such as Blackpool and Llandudno. Its new holiday guide, on sale at a shilling, and the successor to the pre-war Holidays by L.M.S., which it resembles in layout and format, therefore provides amply for every class of holidaymaker, from the day "tripper" to the mountaineer. There are 216 pages, including many illustrations, accommodation lists, and full information about cheap tickets, seat reservations and the like, invaluable when holidays are being planned.

Cranes for Railways and Docks.—This book issued by Cowans Sheldon & Co. Ltd., Carlisle, conveys a very clear picture of the resources of this firm in the manufacture of cranes and other equipment for railways, docks, power stations, steelworks, etc., which has claimed their attention for more than 100 years. The book, which has been divided into eight parts, has one section devoted entirely to railway work, with examples of locomotive hoists, turntables, traversers, fixed

hand cranes, railway breakdown cranes, etc., illustrated by photographs of home and overseas installations. It is of interest to note that this firm built the first balanced turntables used by British railways, and since then Cowans Sheldon & Co. Ltd. has been continuously busy producing this speciality for this country and overseas. Turntables are made to suit standard, broad, and narrow gauges, and normally are supplied in 60, 65, 70, 80, and 100 ft. dia., though they can be built in intermediate sizes to suit locomotives of any type and weight.

British Railways Holiday Guide (Eastern and North Eastern Regions).—This is one of five guides covering the Regions of British Railways and together forming a complete holiday guide to the whole country in succession to the four handbooks of the "big-four" companies. There are 316 pages, which, containing numerous illustrations and many maps, are good value for a shilling. Ample space is devoted to lists of accommodation at both coast and inland resorts. Between Thames and Tyne there is something to suit all tastes. The Broads, old cathedral cities like Norwich, Lincoln and Durham, the rugged Yorkshire coast, the quiet charm of East Anglian villages—all have their particular appeal, and if, with this book in his hand, the holidaymaker hesitates to enjoy himself on what the old L.N.E.R. used to advertise as the "drier side" of England, it is only because of the bewildering choice of holiday centres which it offers.

Constant-Charge System of Cupola Operation.—This new publication by the Mond Nickel Co. Ltd., Grosvenor House, Park Lane, London, W.1, is based on a lecture given by Mr. W. W. Braidwood to the Institute of British Foundrymen. The book, which is well illustrated and contains some typical tables of schedules of castings, metal grades, alloying additions, etc., deals with the use of a standard charge so constituted as to produce an iron of constant composition, which, with the addition of suitable materials in practicable amounts, can be modified in chilling and other characteristics to suit the

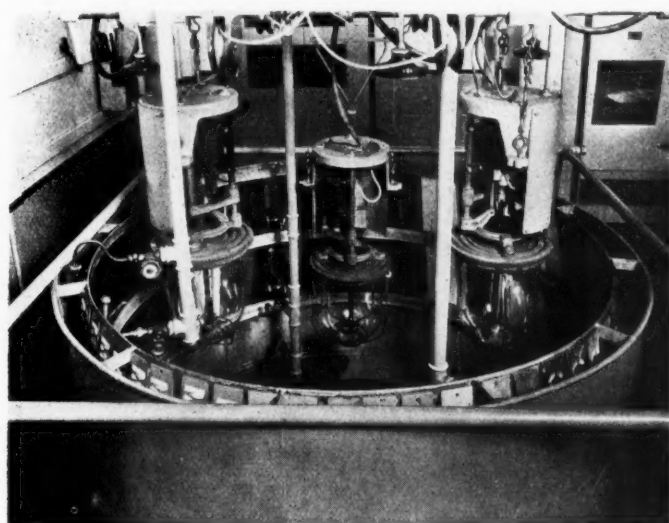
whole range of castings normally produced by any particular foundry. Among these additions is the material known as Nilisloy which has become available in Great Britain only recently. This nickel-silicon inoculant is particularly effective in ensuring ready machinability in light sections.

Electro-Chemical De-corroding.—An electro-chemical process for removing rust and other extraneous surface deposits from metal is described in a pamphlet issued by Derustit Limited, 47, Victoria Street, London, S.W.1. Two advantages claimed for the process are that uncorroded metal is not affected in any way and that complete machines and assemblies often can be derusted without dismantling. The method employed is a bath of alkali solution through which a low-tension electric current is passed. The effect is the exact opposite of electro-plating; instead of depositing a surface layer on the article treated, the process removes the oxide deposit. Nearly all metals, except certain magnesium and aluminium alloys, can be treated, and when these are present in complete assemblies they can in most cases be protected by marking or painting over with insulators.

Coles Mobile Cranes.—Mobile cranes described in this brochure are of two types. First, there are the fully mobile four-wheel cranes in sizes ranging from 1 to 6 tons with four independent motions, and, second, models of 3 and 6 tons having three motions and mounted on lorries. Separate electric motors control the motions. Among the advantages claimed by the makers, Steels Engineering Products Limited, 14, Berkeley Street, London, W.1, are that the cranes are most suitable for negotiating between lines of trucks and loading out of truck on to lorry, and that loads can be lifted at any point on the full circle of 360 deg. Also, control is very simple, while adhesion and travelling power are unaffected by the position of the load. The driver, always in full view of load and ground, controls the motions as well as the steering and travel from the one position without moving.

Accelerated Weathering Tests for Assessing Paint Durability

The testing facilities at the London Midland Region Paint Laboratory have been extended by the installation of a weathering machine of British design



Close-up of the accelerated weathering machine

DURING the past 15 years the Derby Paint Laboratory of the Scientific Research Department of British Railways (London Midland Region), of which a brief account appeared in our issue of October 8, 1948, has devoted much attention to the development of a system for the assessment of paint durability based on accelerated weathering tests. This development has been carried out along with extensive outdoor exposure tests in industrial, rural, and corrosive (tunnel) atmospheres, and on long study of the behaviour of paints on buildings, structures, and rolling stock.

The accelerated weathering test cycle was built up initially round the twin arc Weatherometer (Gardner Model), manufactured by the "Atlas" Electric Devices Company, Chicago, U.S.A. This machine consists of a stationary cylindrical drum of 52 in. dia., inside which the specimens are carried on a rack. At the centre of the drum are arranged two arms at right-angles to each other. The arms, which rotate, at a speed of 3 revs. per hr., extend to close to the specimens.

One arm terminates at its two ends in water sprays which are capable of thoroughly wetting the specimens. From each end of the other arm is suspended a carbon arc lamp. The lamps are hung so that the arc is opposite to the centre of the specimens standing in the rack and eight inches from them. The lamps are of the enclosed type and take, when burning steadily, a current of approximately 13 amps. at 100-110 volts; the covering glass used being opaque to radiations less than 3,200 Å. Thus the specimens can be exposed alternately to light and heat from the arc, and water from the sprays, but the instrument does not give a sufficient degree of flexibility of the exposure cycle.

Early results showed that good correlation exists between accelerated weathering tests conducted in the Weatherometer and exposure under rural conditions so far as

the purely decorative aspect is concerned. Where, however, protection is a criterion the results were found to be unsatisfactory, and anomalies appeared, and pigments such as aluminium, and iron oxides gave an abnormally high resistance to breakdown when compared with paints containing white lead or zinc oxide.

These initial results gave ample justification for further work and established the carbon arc lamp as the light source. It became apparent, however, that the durability of a protective or even decorative scheme could not be completely assessed on the results of a single accelerated weathering cycle. The interpretation of the results of the individual tests is difficult, and can be made only on the basis of the comparison with a standard material of known performance. In the absence of corrosive conditions for the test protection failures, in general, did not occur within a reasonable period. This period could be reduced by the testing of individual rather than multiple coatings, but as the durability of a paint system depends to a large extent on the interrelation between coats, it has been the policy to regard the complete coating system from primer to weather coat as the unit for testing.

Testing on Wood Unsuccessful

The testing of paint systems on wood in accelerated weathering cycles has not been successful, as the volume changes induced by rapid changes in moisture content of the wood, especially when accompanied by warping, induces paint failures not directly attributable to the nature of the paint used. The difficulty may be bypassed eventually by the use of fibre board, which, although possessing equal porosity, will not distort so violently.

Thus, the principal need revealed in the initial tests was the inclusion of a method for accelerating the corrosion of the specimen. Then, the method adopted by

metallurgists to accelerate the corrosion of metal involved the use of a salt spray, but experiments showed that when salt sprays are incorporated in an accelerated weathering cycle on painted specimens the rate of breakdown of the paint film is generally unaffected by the spray, and corrosion of the base metal is only influenced at breaks in the paint coating.

Dilute acids included in the spray did not influence the results, and it was not until sodium bisulphite was introduced that promising results were obtained. One of the criteria used in evaluating an accelerated weathering cycle was similarity of failure under test conditions to those found in practice, and with the introduction of the sodium bisulphite spray abnormalities previously observed were overcome. The excessive chalking especially of zinc oxide paints disappeared and colour changes, e.g., the bluing of brunswick greens (a notable feature of paints containing this pigment in acid atmospheres), were obtained.

In addition, the development of progressive protection failures of specimens exposed to the cycle including the sodium bisulphite spray was more rapid, and increasingly good correlation with the known behaviour of the paints in service was obtained. Later the spray was abandoned for gaseous sulphur dioxide introduced into a chamber in which the specimens were suspended in an atmosphere conditioned to 100 per cent. r.h. and 40° C.

This has proved satisfactory, and discrepancies noticed in the earlier stages have disappeared largely, especially those due to differences in pigmentation. Varnishes have proved rather sensitive to the acid and humid conditions, and excessive darkening not related to the behaviour of the varnish in service tends to develop. It is not contended that the cycle as used at the moment is ideal, but it has been established that it provides a method of test which gives good correlation with service behaviour.

Atmospheric Pollution Test

The apparatus used, simple in design and operation, consists of two units, each made up of two glass tanks (1 ft. × 1 ft. × 1 ft.) with a circular hole (1½ in. dia.) cut in the bottom. In each unit one tank is inverted over the other, the upper tank carrying a rack from which the specimens are suspended on small non-corrosive hooks (polyvinyl coated wire is suitable). The lower tank is fitted with a rubber bung carrying a drainage pipe and two inlet tubes, through one of which steam from a boiler is passed into the chamber at a rate sufficient to maintain a temperature of 40° C. The second inlet tube is used for the introduction of sulphur dioxide, delivered from a syphon at the rate of 15 ccs. per min. measured by a capillary flow meter.

The test specimens are introduced into the cabinet and subjected to the following exposure conditions daily:—

- 3 hr. exposure to 100 per cent. relative humidity at 40° C.
- 1 hr. exposure to 100 per cent. relative humidity together with sulphur dioxide introduced at the standard rate of flow.
- 2 hr. exposure to 100 per cent. relative humidity conditions as for (a).

This daily exposure cycle is repeated on four consecutive days a week, and, in addition, the panels are subjected either to accelerated weathering in the Weatherometer, or allowed to remain in an atmosphere at 100 per cent. relative humidity at room temperature for the rest of the working week (five days) as desired. When

exposure to the corrosive atmosphere is unaccompanied by exposure to ultra-violet light the results compare accurately with results obtained under extremely corrosive conditions, e.g., exposure in railway tunnels or the underside of bridges and station awnings, which are subjected to humid and corrosive conditions. It is of interest to note that these extreme conditions can be reproduced most readily in laboratory accelerated exposure tests because the overwhelming cause of failure is obvious, thus supporting the view that the most important consideration controlling the accuracy of accelerated weathering tests is the balance of the factors which produce the degradation of the film.

This apparatus has been used successfully for many years, but the temperature and humidity control leave much to be desired, and it has been decided to develop more rigid control and reproducible conditions, a pre-requisite of the wider use of the test in specifications by the use of the humidity cabinet.

Accelerated Exposure Cycles at Present in Use

For the complete assessment of the relative merits of new processes based on new materials accelerated exposure tests are carried out using the following outlined accelerated cycles. For purely decorative finishes the extreme corrosive test cycle is omitted, and interior finishes are evaluated with emphasis being placed on the more superficial properties such as gloss and colour retention.

Accelerated Cycle (i) (for assessment of behaviour under rural conditions)

The cycle consists of the following. Exposure in Weatherometer using two carbon arcs in conjunction with one water spray—the test is carried out until significant differences to failures are obtained. The weekly exposure is made of 5 cycles of 24-hr. duration.

Accelerated Cycle (ii) (for assessment of behaviour under industrial conditions)

(a) Test specimens exposed for initial ageing period of 48-hr. duration to conditions as stated in cycle (i) followed by exposure to:—

- (b) 18 hr. exposure in Weatherometer using 2 arcs with water spray;
- (c) 6 hr. exposure in humidity sulphur dioxide cabinet; the sulphur dioxide is introduced for the fourth hour of the test only.

The normal weekly exposure after the initial exposure period (a) consists of five periods of exposure as outlined in (b) with four periods of exposure to cycle (c).

Accelerated Cycle (iii) (for assessment of behaviour under extremely corrosive conditions)

The weekly exposure consists of four periods of 6 hr. duration to humidity/sulphur dioxide test as outlined in cycle (ii) (c); the remaining 18 hr. of the day are spent in an atmosphere at 100 per cent. relative humidity at room temperature (15-25° C.).

It is considered that materials capable of withstanding the effects of the above accelerated tests would be satisfactory as to durability under service conditions, provided the surface is adequately prepared prior to painting. The best three coat paint systems of the protective class withstand the test cycle (iii) for considerable periods up to 100 exposure periods, and have given outdoor durability of from 7-10 years under normal industrial atmospheric conditions.

The past national emergency clearly emphasised the usefulness of accelerated exposure tests when materials had to be modified at short notice because of unpredictable shortages of raw materials of proved worth. As a result of the experience gained the railway laboratory uses the accelerated weathering tests outlined with confidence, and it has become necessary to extend the testing facilities. The twin arc machine built in the U.S.A. has proved the value of the principle, but it appeared desirable, particularly under present conditions, to obtain the new machine in this country embodying the modifications which experience had shown were neces-

sary. In 1946, Kelvin Bottomley & Baird Limited of Glasgow was approached and agreed to produce a weathering machine for the railways to a general specification laid down, which aimed at making the operation of the machine as flexible as possible so that the best possible conditions for accelerated weathering tests could be determined. The machine, which was delivered in 1948, is described in the following paragraph. A general illustration of it accompanied our article on the laboratory, and a close-up view heads the present article.

Accelerated Weathering Machine

The body of the machine consists essentially of a revolving drum (4 ft. dia.), fitted with racks capable of carrying 3 rows of test specimens of usual size (9 in. x 2 in. or 9 in. x 3 in.). The drum can be rotated at three speeds—4, 3 or 2 revs. per hr. The rotation of the drum instead of the arc and spray mechanism was considered more satisfactory as it eliminated the use of slip-rings and brushes in the arc lamp circuits, thus reducing electrical maintenance and fire risk difficulties—important in paint factories.

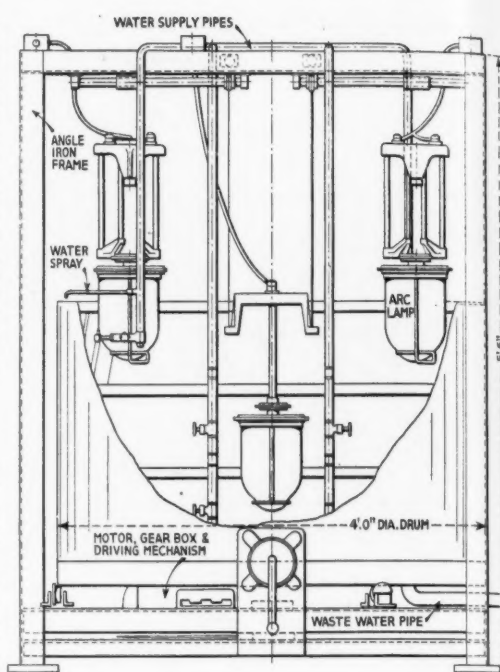
In the original machine the rack supported the panels with a slope outwards towards the side of the drum, but in the new machine the test specimens are sloped in the reverse direction to enable water to be flowed over the back if necessary for the control of temperature. The light source consists of four carbon arc lamps, one pair at a fixed height opposite the top-most panel rack, and the second pair capable of being raised or lowered independently to operate at any of the three rack levels. All four lamps can be moved independently along the carrying arm so that the distance between the arc and the specimens can be varied from 8 in. to 18 in.

Water sprays are provided at the four quarters of the drum and are situated between the arc lamps, permitting the test specimens to be sprayed on the back as well as the front of the specimen. The front spray gives the desired humidity and temperature changes, and the back spray enables the panel to be further cooled when passing in front of the arcs. Each water spray is fitted with its own individual cock, and each lamp is capable of individual control, as it is fitted with its own choke and switch. The variation in the speed is controlled by a three-speed gear box beneath the drum with the other driving mechanism.

Self-contained Unit

The whole unit is self-contained and is built on a rigid metal frame of steel angle sections. The height is 6 ft. and a floor space of approximately 5 ft. square is required. The frame is fitted with supplementary angles and gussets to provide seating for the rollers and gear box mechanism.

The drum is of heavily galvanised sheet iron with a gunmetal base ring accurately machined to run on the three ball-bearing rollers which take up any



Cut-away drawing of the accelerated weathering machine

lateral motion of the drum as well as the weight. The rollers are all equipped with grease nipples for ease of lubrication. The floor of the drum is sloped towards the centre to four drain holes which drain into an annular channel trough below the drum and thence through a 2-in. pipe to the side where a connection can be made to the laboratory drain.

The motor and gear box unit is mounted on shock-absorbing resilient blocks. The motor ($\frac{1}{2}$ h.p.) operates at 1,400 r.p.m. and is coupled directly to the gear box which is of robust construction and designed to give many years of continuous running. The gear change lever for selecting either of the three speeds is extended to the outside of the frame and can be operated whether the drum is rotating or not. The final output shaft from the gear box is coupled to a friction drive which can be adjusted by tightening or easing four springs and provides a safeguard to the driving mechanism.

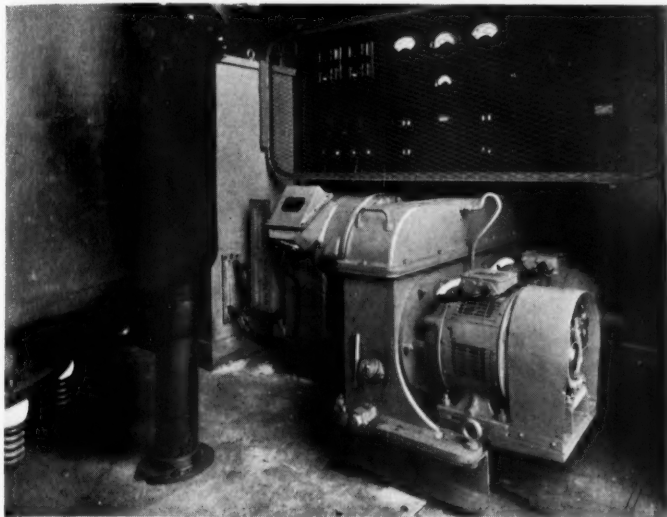
The water sprays have been arranged from four vertical supply pipes, each spray having individual needle valve control. The sprays operating on the front of the specimens consist of a $\frac{1}{2}$ -in. dia. brass tube with eight small holes placed at equal intervals along its 8 in. length, and are so arranged to wet uniformly the panels as they pass in front of the sprays. The back sprays consist of a small jet which thoroughly wets the backs of the panels and cools them before passing before the arc lamps.

The ultra-violet light is provided by four Kelvin Standard High Actinic Arc Lamps which have a voltage drop across the arcs of 100-110 volts and take 12-13 amps. when running after the initial momentary 30 amp. surge when started. The two upper lamps are suspended at a fixed height opposite the top panel rack and can be moved outwards and inwards as required. The two lower lamps can be

(Continued on page 217)

Frequency Correcting Equipment, Southern Region

Electromagnetic and electronic devices automatically correct abnormal frequencies in Grid supplies and deliver normal standard frequency of 50 cycles a second



Electromagnetic frequency corrector at Merstham sub-station

FROM time to time during the last two or three winters, when occasional severe cold spells have coincided with morning and evening peak load periods on the Grid System, the Southern Region has reported failures of signalling circuits due to low frequency of the main power supplies.

The great shortage of generating plant in the country is well known, and the variations that have occurred in the standard frequency of 50 cycles a second directly follow from this shortage, which is likely to continue for some years. Under prolonged overload the inadequate generating plant cannot be maintained at full speed and frequency, with the result that electric clocks and similar devices depending upon standard frequency for accurate operation are affected. During off-peak periods the grid is operated at frequencies higher than normal to compensate for previous slow running.

The signalling system in the electrified area of the Southern Region outside London is peculiarly susceptible to this variation in frequency because its signalling current comes direct from the Grid 132 kW. system. Due to the special form of circuit used, variations in supply frequency as small as $1\frac{1}{2}$ per cent. reduce the sensitivity of the signal relays. A variation of 3 per cent. can cause heavy delays to traffic, since the "fail to safety" feature is automatically involved thereby; this puts all signals to danger and stops the trains. It was, therefore, necessary to devise some means whereby the signalling system could be rendered immune from such disturbances.

Electrical engineers of the Southern Region, in conjunction with the General Electric Co. Ltd. and the English Electric Co. Ltd., have now produced new equipment which has successfully overcome the difficulty by automatically correcting the abnormal frequencies received and by delivering a normal standard frequency of 50 cycles a second. The two types of equipment produced by the respective firms work on entirely different principles;

one is of the electromagnetic type, while the other makes use of electronic principles.

The design of the frequency correction equipment supplied by the General Electric

Co. Ltd. is based on the principle that a magnetic field, rotating at a speed proportional to the supply frequency, is created when a three-phase wound induction motor stator is supplied with three-phase alternating current. This rotating field induces currents and voltages in the rotor.

If the rotor is stationary, however, the frequency of the currents and voltages induced in the rotor will be the same as the frequency of the stator currents and voltages. In other words, the machine acts as a transformer and, if sliprings are fitted and connected to the rotor winding, power can be taken from the sliprings to supply an external load.

At standstill, therefore, the voltage appearing at the rotor sliprings has a frequency (slip frequency) equal to that of the stator supply. If it is desired to increase the frequency of the voltages at the rotor sliprings it is only necessary to cause the rotor of the machine to revolve in a direction contrary to that of the rotating field of the stator. Conversely, rotation of the rotor in the same direction as that of the stator field will produce a reduced frequency at the sliprings. The increase or decrease in frequency produced in the voltage at the sliprings is proportional to the speed of revolution of the rotor.

To produce these results, the frequency correction equipment therefore comprises a main 3-phase induction motor stator, a single phase rotor mounted within the stator shell, a pair of geared rotor driving motors and an electromagnetic brake, together with the necessary control equipment. The main machine is designed for a full load output of 10 kVA., single-phase, at 440 volts and 50 cycles.

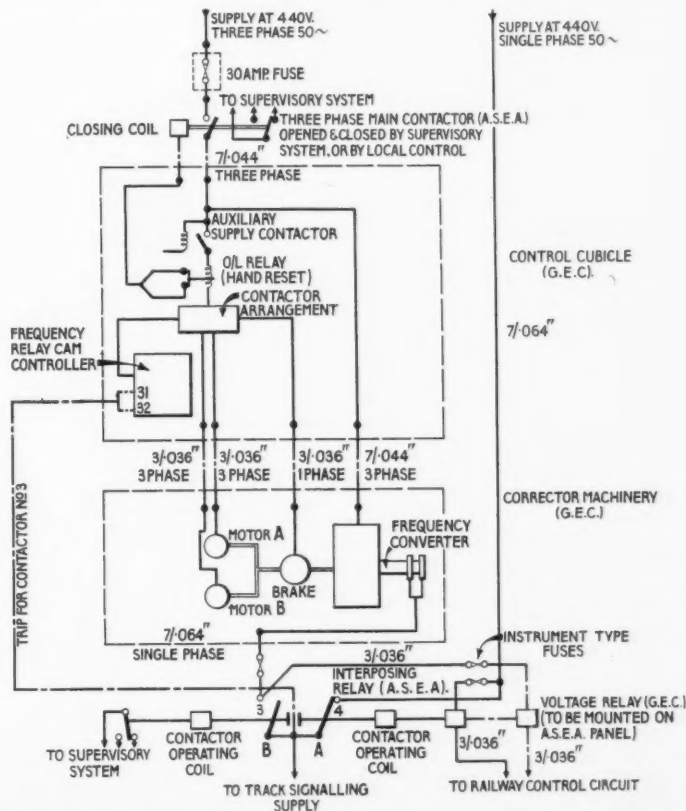


Fig. 1—Schematic diagram of electromagnetic frequency correcting equipment

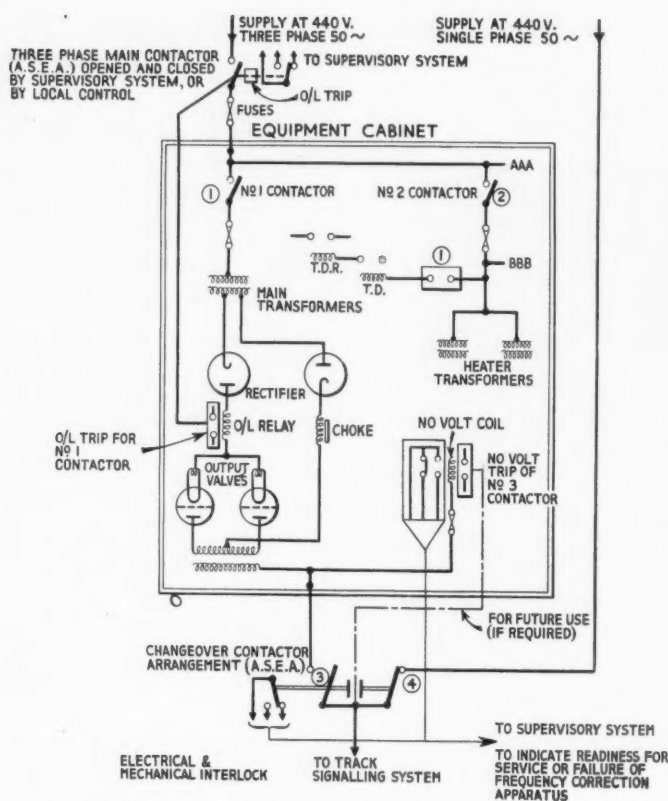


Fig. 2—Schematic diagram of electronic frequency correcting equipment

Power at Grid frequency is supplied to the stator of the main machine and the signalling load is connected to the rotor sliprings. A frequency-sensitive relay, tuned to a frequency of 50 cycles a second and connected in the signalling supply circuit, exercises control, in steps and by a system of relays and contactors, over the speed and direction of the main rotor via its driving motors.

When the equipment is in service, and the Grid operating at normal frequency, the frequency-sensitive relay assumes a neutral position and the rotor of the main machine is held stationary by the electromagnetic brake; the frequency of the supply obtained from the rotor sliprings of the main machine is then equal to that of the Grid supply. Should the Grid supply frequency rise or fall more than 0.3 c/s, however, the frequency-sensitive relay will initiate a train of operations resulting in the rotor of the main machine being driven at a speed corresponding to the first step of adjustment in the appropriate direction for raising or lowering frequency. If this alteration in output frequency is insufficient the frequency relay will operate further contactors until the correct speed of the rotor is attained within the limits of adjustment of the machine.

The output frequency can be altered in four stages of about 0.5 c/s each to raise frequency and in two stages to lower frequency. The output frequency from the equipment can be maintained between 49.7 c/s and 50.3 c/s even although the Grid Supply frequency varies from 47.5 c/s to 51.4 c/s. Should the Grid frequency vary outside these limits the corrector will not be able to maintain its

output frequency within the limits of ± 0.3 c/s, but will continue to give the maximum correction for which it is designed.

Electronic Type

The frequency correction equipment developed by the English Electric Co. Ltd., works on electronic principles. It is designed to deliver single-phase alternating current at 440 volts, and at a steady frequency of 50 c/s, when supplied with three-phase alternating current of variable frequency at 440 volts.

Three-phase alternating current at 440 volts is taken from the variable frequency supply source and is converted by means of rectifying valves into direct current. The direct current is then reconverted into alternating current of the required frequency by inverting valves and circuits controlled by a special timing unit tuned to operate at 50 c/s.

The electronic equipment employs many of the standard circuits and techniques used in radio practice but their application to equipment rated at 50 c/s and 440 volts for an

output of 5 kVA. is unusual. The main feature of interest in the performance of the electronic equipment is that a controlled frequency output can be obtained from a source whose frequency varies widely.

Supervisory Control

Both types of equipment are designed to be normally switched in and out of service by remote supervisory control. The necessary supervisory control equipment for the frequency correction apparatus has been superimposed on the existing control system and was supplied by Asea Electric Limited. Local control of the frequency correctors can also be exercised at the substations concerned in emergency or for testing purposes.

The main consideration in designing the general arrangement and the protective equipment has been to ensure, as far as possible, that continuity of signalling power is maintained. The arrangement of the electromagnetic frequency corrector is such that in the event of the equipment failing to deliver either the correct frequency or voltage it will switch itself out of service, and supplies directly from the Grid will be automatically restored as quickly as possible. A similar arrangement is also incorporated in the electronic correcting equipment.

Automatic changes of supply are signalled back to the control room concerned via the supervisory control system and the fault can be investigated with the knowledge that, in the meantime, the best alternative signalling supply is being maintained.

Ten electromagnetic sets and one electronic have been installed at the points on the Southern Region system shown in Fig. 3. Plates on page 211 show items of equipment in typical traction substations and also at a control room. Figs. 1 and 2 show diagrammatically the wiring arrangements of the two forms of correcting equipment.

It should be mentioned that, in order to reduce the time of manufacture to a minimum, much of the material for the machines included in the electromagnetic plant was supplied by the General Electric Co. Ltd. to H.M. Dockyard at Chatham, where the major part of the assembly work was carried out.

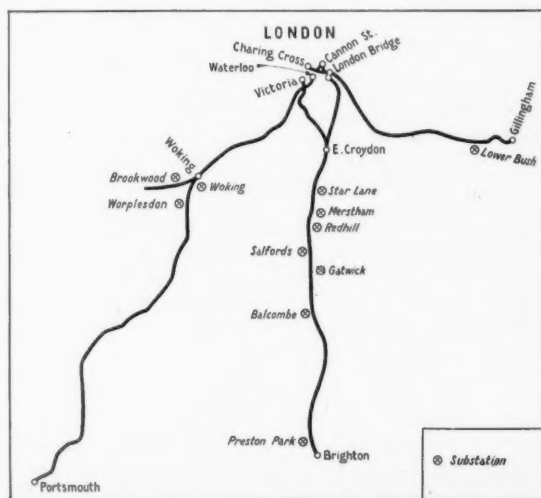
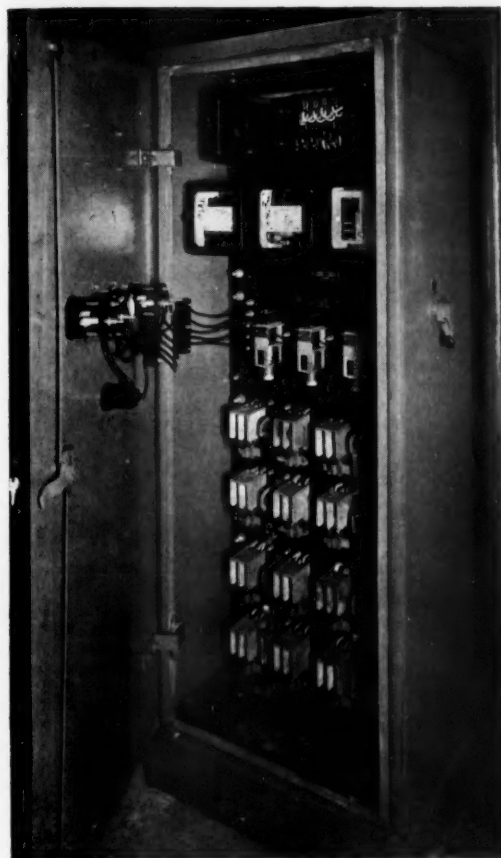


Fig. 3—Situation of frequency correctors on Southern Region electrified system

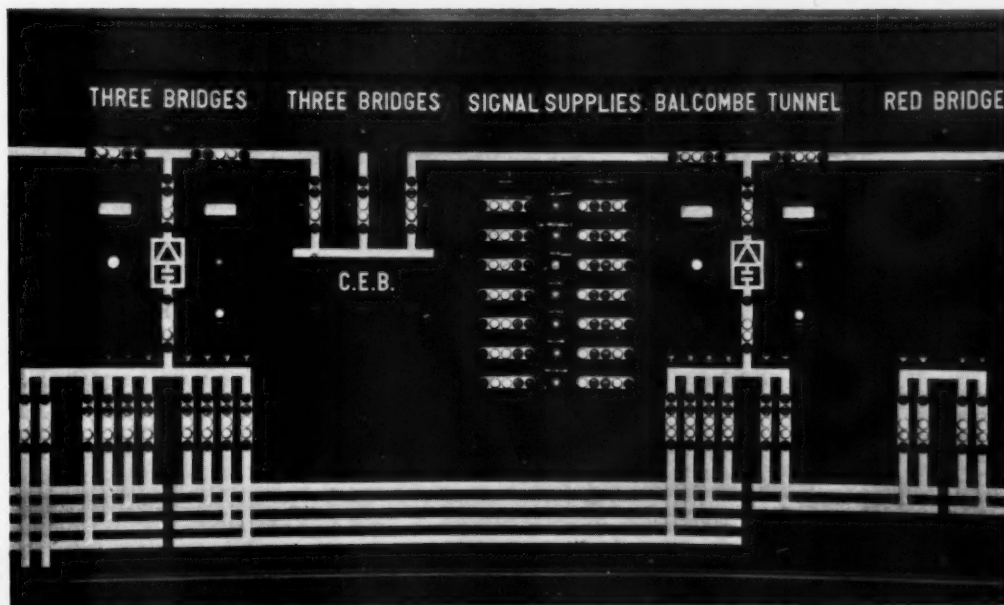
Frequency Correcting Equipment, Southern Region



Electromagnetic frequency corrector control cubicle, Merstham sub-station



Electronic frequency corrector main cubicle at Worplesdon, Surrey



Control room at Three Bridges, Sussex, with supervisory panel for controlling signalling current on main traction switchboard

Notes on the Brighton Electrics in 1948

Comparing punctuality and gross and net times for journeys by non-stop and equivalent trains recorded in 1948 with those of 1946 and 1947

(From a Correspondent)



Victoria to Brighton non-stop electric train near Haywards Heath

NOTES on the Brighton electric services recorded in 1946 and 1947 appeared in *The Railway Gazette* of March 28, 1947, and March 26, 1948, respectively. Those published last March were considered by the administration of British Railways, Southern Region, to be of sufficient value and interest to warrant their being reprinted and distributed for the benefit of the staff, and the motormen in particular. The series therefore has been continued, and corresponding information, collected in 1948, is given below.

Up Non-Stop Journeys

Dealing first with the non-stop workings, once again only one journey in the up direction was completed without any out-of-course delay due to adverse signals, or temporary engineering speed-restrictions. On 75 per cent. of the up journeys, the trains were diverted from the main to the local line at Coulsdon North, as against 83 and 68 per cent. in 1946 and 1947, respectively. Incidentally, now that section times have been worked out for the whole journey to Victoria—instead of only to East Croydon, as previously—it is clear that loss of time occasioned by the 30-mile restriction over the turn-out and very similar speed over the local line reverse curves at East Croydon, amounts to fully 2 min. As the majority of non-stop expresses are so diverted, a 60-min. up schedule is fully justified, as compared with the 58-min. usually allowed for down trains subject to no such diversion.

Two up journeys are particularly noteworthy, though for very different reasons. In the course of one of them, there unfortunately occurred the first and only mechanical defect to cause delay to any of the 200 such trains by which the writer has travelled during the past three years. A current pick-up shoe became defective, but smart lineside repairs reduced delay to a minimum; this, and other delays due to relaying and three signal checks,

together cost 25½ min., but over 5 min. were regained, and the train arrived only 20 min. 12 sec. late. This regrettable occurrence seriously spoiled the otherwise superlative, though still excellent average time taken by all trains from Brighton to Victoria, as the table below shows.

The other notable journey suffered no fewer than six checks in addition to a dead stand of 1 min. 23 sec. at signals, resulting in an estimated loss of time aggregating fully 7½ min. Not to be beaten, however, the enterprising motorman concerned contrived to bring his train into Victoria in 59 min. 20 sec. from Brighton, or in 51 min. 48 sec. net for the 50.9 miles.

Comparative Journey Times

Overall gross and net average times and punctuality records for both up and down non-stop trains, are tabulated below. The gross times are the actual periods of time between departure and arrival, irrespective of out-of-course delays occasioned by adverse signals, or temporary engineering speed-restrictions.

	Up : Brighton to Victoria Schedule 60 min.			Down : Victoria to Brighton Schedules 58, 59 and 60 min.		
	1946 min. sec.	1947 min. sec.	1948 min. sec.	1947 min. sec.	1948 min. sec.	
Average gross journey times ...	60 29	60 31	60 22 (59 31)*	59 05	59 51	
Average net journey times ...	55 45	56 09	56 25	54 39	54 54	
Percentage of trains taking (gross times)—						
60 min. or under ...	54	40	62	57	62	
60-61 min. ...	17	24	23	14	13	
61-65 min. ...	26	32	11	29	25	
Over 65 min. ...	3	4	(0)	0	0	

* Figures in brackets omit the train affected by the mechanical defect explained above

Net times are those which would have been taken, but for these out-of-course delays.

The table above shows that the 1948 up-direction record is even better than for the previous year. In spite of the unfortunate mechanical defect, the average lateness was only 22 sec., or, if it is disregarded,

the average arrival would have been half-a-minute before time; both remarkable figures, as also was the 62 per cent. of all up trains that completed their journeys to schedule, or, actually, in under booked time. Another fine record is that, apart from the one delayed by the defective shoe, only three out of the 26 up trains were more than 1 min. late, and then only 1 sec., 4 sec., and 1 min. 9 sec. over a minute late, an excellent achievement for 25 journeys.

Down Train Workings

The down non-stop journeys were not quite so exceptional, though they were eminently satisfactory, and the punctuality record was even better than during 1947. The high standard is emphasised by the fact that no train took over 62 min., especially as all 1948 down journeys were in the rush hours, when line-occupation approaches saturation point. Moreover, all suffered out-of-course delays, including some signal stops outside Brighton, permitting no recovery of lost time. The percentage of journeys completed in under the hour was 62 in both directions.

Turning now to the 4.45 p.m. from Victoria to Eastbourne, with its difficult 29-min. schedule for the 27.5 miles, start to stop, from East Croydon to Haywards Heath, we find that of the 20 journeys recorded in 1948, only three on this section were completed without signal, or temporary engineering delays. As these delays averaged just over 2½ min. a journey, time-keeping would have been difficult even if they had occurred in the earlier part of the journey. Actually, nearly all the delays took place within the last seven miles, thus making the regaining of time impossible. It is not surprising, therefore, that the average gross journey time was 30 min. 17 sec., or 1½ min. over schedule.

It may be noted, however, that all the three unchecked runs were completed in under 29 min., as also were two others that suffered checks. In fact, 25 per cent. of the arrivals were before time, 15 per cent. were less than a minute late, 30 per cent. were within 2 min. of schedule, and the remaining 30 per cent. were between 2 and 4½ min. late.

On the other hand, the estimated average net time was only 27 min. 46 sec., 1½ min. better than schedule, and only 16 sec. in excess of even time (60 m.p.h.) start to stop, very remarkable as an average of 20 journeys. In fact, even time was bettered on five occasions, on the net basis, and the two fastest net times recorded were 26 min. 34 sec. and 26 min. 38 sec., or just over and just under 62 m.p.h. start to stop.

NON-STOP RESULTS

Similarity of the two journeys was consistent throughout, as the initial seven-mile continuous climb out of East Croydon—through over 120 vertical ft. and at 1 in 264 and 1 in 165—was completed in 8 min. 33 sec. and 8 min. 38 sec., and Three Bridges, 19 miles from the start, was passed in 18 min. 42 sec and 18 min. 44

sec. respectively before delays intervened. As in the notes on these services in 1947, preceding estimated net times are again confirmed by calculating the averages of the times, section by section—the 51 miles being divided into 17 sections for this purpose. By omitting all section times affected by out-of-course delays, and adding together all the remaining section times, and striking a mean between the sums obtained, true average net times were assessed. A general table for the various services embodying these sums of the average section times, and also the sums of the fastest recorded section times, is given below, to bring the previous year's information up to date.

AVERAGE NET AND POSSIBLE JOURNEY TIMES

(Based on section times unaffected by out-of-course delays)

	1946	1947	1948
	min. sec.	min. sec.	min. sec.

Up Non-stop
Brighton—passing
E. Croydon (40.4
miles)—

Sum of average section
times (a) 41 29 41 20 41 06
(b) 42 14 42 23 42 44

Sum of fastest section
times (a) 37 02 38 25 38 06
(b) 37 56 38 55 38 50

Brighton—Victoria
(50.9 miles; schedule
60 min.)—

Sum of average section
times (a) 54 38
(b) 56 45

Sum of fastest section
times (a) 49 44
(b) 50 51

(a) indicates trains not diverted to local line at
Coulsdon North, and (b) denotes those so diverted.
Such diversion is estimated to cost fully 2 min. on the
whole run.

Down Non-stop
Victoria—Brighton
(Schedule 58-60 min.)—

Sum of average section
times ... 55 03 54 34 54 44

Sum of fastest section
times ... 52 01 51 20 52 03

4.45 ex-Victoria,
E. Croydon—Haywards
Heath (27.5 miles)—

Schedule ... 30 30 & 29 29

Sum of average section
times ... 28 40 27 48 27 53

Sum of fastest section
times ... 27 27 26 55 26 02

It will be seen that the above average figures differ from the corresponding estimated net times by only a few seconds, the estimates usually being on the conservative side. Those for the up and down non-stop services show that 55 min. is a feasible average overall time with a clear road, or 57 min. for the up trains diverted to the local line at Coulsdon North. In other words, existing schedules allow 3 min. for possible out-of-course delays. At the same time, the fastest section times collectively indicate the schedules that could be introduced in favourable conditions—for instance, in other than rush-hour periods—whenever they may be considered desirable.

In the case of the 4.45 p.m. working dealt with above, the margin for delays appears to be only about 1 min. 10 sec., thus confirming the comparative tightness of the booking, especially as it is in the rush-hour period.

Finally, the foregoing notes prove conclusively how excellently the consistent high standard of work and punctuality of the electrics on the Brighton line is being maintained year by year, and in some cases improved.

The notes for 1948 include records of up journeys by the 9.35 and 11.25 a.m., and the 1.25, 3.25 and 5.25 p.m. ex-Brighton, and down journeys by the 4.45, 5.25, 6 and 6.30 p.m. ex-Victoria; the journeys were evenly spread throughout the year, in a variety of weather conditions.

An Underground Line in Johannesburg

An extension of the Reef electric service into an industrial quarter of the city to cater for native traffic

IN our issue of April 13, 1945, some particulars were given of an underground railway being built by the South African Railways in Johannesburg. Further details of the line, which was opened on June 4, 1945, are now available.

The railway is an extension of the existing Booysens-Village Main line, which

£247,857 have been spent of the £306,400 estimated for the whole work.

The remaining work to be completed, including mainly the provision of permanent station buildings at Faraday Street, is at present in abeyance and a temporary booking office is in service at Faraday Street.



Faraday Street Station, Johannesburg, with multiple-unit electric train at island platform

takes off from the Rand mineral line at Booysens in the southern suburbs of Johannesburg, to Faraday Street at the south end of Eloff Street. The Booysens-Village Main section is 63 chains in length and runs in the open. The new extension is 34 chains long and runs almost entirely underground, beneath surface tracks and sidings, in a cut-and-cover concrete tunnel, 1,480 ft. long. The track is of 81 lb. standard rail on wooden sleepers, bedded in stone ballast. Up to the present

The line was constructed purely for native suburban traffic and caters primarily for peak-hour demands in the early morning and late afternoon, when a very frequent service of electric trains is run between Faraday Street (serving the industrial areas south of the city centre) and the native townships such as Orlando and Pimville, established by the Johannesburg City Council on the outskirts of the city, some 11 to 14 miles to the west. Normally, eleven-car electric sets are used.



North end of Village Main Station showing entrance to cut-and-cover tunnel

ELECTRIFICATION IN EASTERN EUROPE.—The Bulgarian Five-Year Plan 1949-1953 envisages a beginning of a long-term electrification programme; 186 route-miles of lines radiating from Sofia are to be converted to electric traction. This mileage will affect four sections of main lines, of which the first two to be taken in hand will be Sofia—Plovdiv (107½ route-miles) and Sofia—Mezdra (55 route-miles). Mezdra is north of Sofia where the main line from north-eastern Bulgaria joins the main line from the north-west. The

whole programme includes the conversion of some 497 route-miles, and the remainder is to be electrified by 1960. The consumption of electric power on the two first-mentioned lines has been calculated at 150,000,000 kWh. annually, and the current is to be supplied by a power-station of 50,000 h.p. In Poland, according to recent reports, the conversion of the Warsaw—Minsk Mazovrcki section of the main line to Terespol na Bugiem, the frontier station on the Moscow route, is nearing completion.

Modernised Ticket Office at Bowes Park, Eastern Region



Interior of office after modernisation



Office front after modernisation, with luggage rest beneath window



Interior of office, looking towards booking counter, before modernisation



Office front before modernisation

RAILWAY NEWS SECTION

PERSONAL

The Minister for Industry & Commerce of Eire has appointed Mr. T. C. Courtney, Chief Engineering Adviser, Department of Local Government, to be Chairman of Coras Iompair Eireann, in succession to Mr. A. P. Reynolds, who has resigned.

Colonel R. J. Walker, O.B.E., R.E., has been appointed an Inspecting Officer of Railways in the Ministry of Transport.

Mr. N. R. Crump, Vice-President (Operating) of the Canadian Pacific Railway, has been appointed a Director of the company in place of the late Mr. George W. Spinney.

We regret to record the death on February 21, at the age of 90, of Mr. Finlay Forbes Scott, C.B.E., who was Superintendent of the Line, London Brighton & South Coast Railway, from 1907-22.

Mr. C. L. Smith, Advertising Manager of the Tyre Group at Fort Dunlop, has been appointed to succeed Mr. Harold Eley as General Advertising Manager of the Dunlop Rubber Co. Ltd., when he retires at the end of next month.

Mr. I. R. Gamble, Assistant District Goods & Passenger Manager, Peterborough, Eastern Region, British Railways, has been appointed Assistant District Passenger Manager, London, in succession to Mr. C. R. Wade, who has been transferred to the headquarters of the Railway Executive.

The Road Transport Executive announces the following appointments: Mr. G. Dickinson to be District Manager, South Eastern Division (Freight); Mr. R. Mackenzie to be Divisional Engineer, Midland Division (Freight); Mr. J. Steele to be Divisional Staff & Welfare Officer, North Eastern Division (Freight).

The Governor of Northern Ireland has appointed Mr. R. G. Manson and Mr. James O. Wilson as members of the Transport Tribunal for Northern Ireland, the Chairman of which (Lord Justice Babington) has already been appointed. Mr. Manson began his career on the Assam Bengal Railway, of which he was appointed Agent & General Manager in 1940. In 1945 and 1946 he was Officiating General Manager of the Bengal & Assam Railway, and Port Commissioner, Calcutta. Mr. Wilson is partner in the firm of Wilson, Hennessey & Crawford, Chartered Accountants, Belfast; he was formerly Auditor of the Northern Ireland Road Transport Board and of the Belfast & County Down Railway, and was a member of the Pigs Marketing Board. The Tribunal will function as from March 1, and all correspondence should be addressed to the Secretary, Transport Tribunal for Northern Ireland, Ministry of Commerce, 97, Lisburn Road, Belfast.

Mr. John Elliot, Chief Regional Officer, Southern Region, British Railways, who, as recorded in our February 11 issue, has been invited by the Government of Victoria to report generally on the Victorian Government Railways, was born in 1898, and educated at Marlborough and the Royal Military College, Sandhurst. He saw active service with the Third Hussars in the first world war. In 1920 he resigned his commission to take up journalism, and

advancement of mechanical engineering science by way of invention, design and investigation, communicated, in part, in a lecture delivered to the Institution in 1948. Mr. Baumann is Chief Mechanical Engineer, and a Director, Metropolitan-Vickers Electrical Co. Ltd.

In consequence of the acquisition by the British Electric Traction Co. Ltd. of the whole of the share capital of Eddison Plant Limited, Mr. Raymond W. Birch, Mr. P. G. Stone Clark and Mr. E. L. Taylor have been appointed to the board, from which Mr. Edward Barford, Mr. E. E. G. Odds and Mr. H. C. Ryan have resigned; Mr. Birch has been appointed Chairman.

INDIAN RAILWAY STAFF CHANGES

Mr. A. W. C. Villiers, Deputy Chief Engineer, Bombay, Baroda & Central India Railway, has been appointed to officiate as Engineer-in-Chief of that railway.

Mr. O. R. Tucker, Chief Traffic Superintendent, East Indian Railway, has been appointed to officiate as Chief Controller of Standardisation, Central Standards Office for Railways, Railway Board.

Dr. H. H. Cavendish Fuller has been appointed Chief Medical Officer to the Railway Executive. A portrait and biography of Dr. Fuller appeared in our issue of May 21 last.

We regret to record the death on February 20 of Mr. C. M. Jacobs, who was Signal Engineer of the Great Western Railway from 1928-36.

Señor Ismael Castro, Sub-Secretary of the Argentine Transport Secretariat, and Colonel Pascual Semeroiz, Director-General of Constructions & Acquisitions in the same Secretariat, recently arrived in London on a brief visit.

Mr. S. A. Fitch, O.B.E., D.C.M., M.M., M.Inst.T., Assistant Superintendent of Operation, Southern Region, British Railways, who was recently appointed Assistant Operating Superintendent, London Midland Region, entered the service of the South Eastern & Chatham Railway in 1911. He saw active service during the 1914-18 war; was awarded the Distinguished Conduct Medal and the Military Medal; and, in 1918, received a commission. On his return to railway duties he was appointed to the Office of the Superintendent of the Line. From 1924 to 1938 he held various positions with the Southern Railway, including those of Assistant Stationmaster, Victoria; Assistant Agent, Nine Elms; Assistant to London Central Divisional Superintendent; and Assistant Divisional Superintendent, London East, and London West, Divisions; at the conclusion of that period, he was appointed General Assistant to the Traffic Manager. When the recent war broke out, he was



Photo

Mr. John Elliot

[Lafayette]

Chief Regional Officer, Southern Region, British Railways, who has been invited to report generally on the Victorian Government Railways

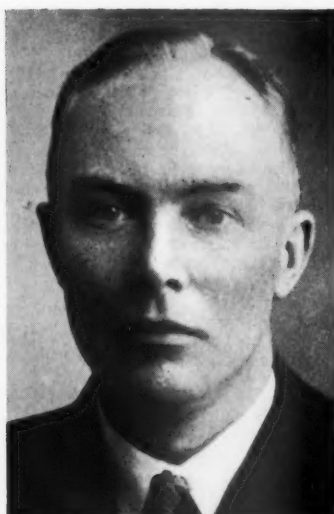
after newspaper experience in America and England he joined the Southern Railway in January, 1925, as Assistant to Sir Herbert Walker in charge of publicity and advertising. In 1930 he was appointed Development Officer in the newly-formed Traffic Department and he became Assistant Traffic Manager in 1933. In 1937 he became Assistant General Manager, and in 1939 Deputy General Manager. He assumed the duties of General Manager on October 1, 1947, on the appointment of Sir Eustace Missenden to the Chairmanship of the Railway Executive. He was closely connected with the organisation of the railway-operated air services. In 1935, in company with Sir Eustace Missenden, he visited the United States and Canada to study rail, road and air conditions in those countries.

The council of the Institution of Mechanical Engineers has awarded the 1948 James Clayton Prize to Mr. Karl Baumann, for his contribution to the



Mr. S. A. Fitch

Appointed Assistant Operating Superintendent, L.M. Region, British Railways



Mr. E. H. Baker

Appointed Assistant Divisional Motive Power Superintendent, Derby, L.M. Region, British Railways



Mr. E. A. Milne

Appointed Carriage & Wagon Engineer, Scottish Region, British Railways

posted to the Aldershot Command as Railway Liaison Officer, but after the evacuation from France he returned to his post of General Assistant to the Traffic Manager; later he became Acting General Purposes Officer. Mr. Fitch, who had recently been made an M.B.E., subsequently proceeded again on active service as Deputy-Director (Railways), 21st Army Group, with the rank of Colonel, and for services in North West Europe was made an O.B.E. On his return to the Southern Railway in 1945 he was appointed Assistant Superintendent of Operation. In the next year he formed one of a party of Southern Railway officers which visited the U.S.A. and Canada to study developments in diesel traction.

WESTERN REGION APPOINTMENTS

Mr. H. W. Howard, Goods Agent, Paddington, to be Claims & Salvage Agent, Commercial Superintendent's Office, Paddington, in place of Mr. R. A. Sims, retired.

Mr. E. C. Cookson, Divisional Engineer, Newport, to be Assistant Engineer (Permanent Way), Paddington.

Mr. A. E. Flaxman, Assistant District Goods Manager, London, to be Goods Agent, Paddington.

Mr. A. Shoemack, Assistant District Goods Manager, Birmingham, to be Assistant District Goods Manager, London.

Mr. B. Seymour, Commercial Superintendent's Office, Paddington, to be Assistant District Goods Manager, Birmingham.

Mr. R. F. Foley, Goods Agent, Smithfield, to be Goods Agent, Birmingham.

Mr. J. H. Taylor, Chief Clerk, Divisional Engineer's Office, Shrewsbury, to be Chief Clerk, Divisional Engineer's Office, Neath.

Mr. E. G. Burch, Chief Clerk, Divisional Engineer's Office, Oswestry, to be Chief Clerk, Divisional Engineer's Office, Shrewsbury.

Mr. F. S. Hyde, Foreman, Locomotive Works, Chief Mechanical Engineer's Department, Swindon, to be Assistant (Works), Signal & Telegraph Engineer's Office, Reading.

Mr. D. G. Page, Solicitor's Office, Paddington, to be Solicitor Assistant Paddington.

Mr. E. H. Baker, M.I.Mech.E., who, as recorded in our January 21 issue, has been appointed Assistant Divisional Motive Power Superintendent, Derby, London Midland Region, British Railways, commenced his career as a premium apprentice at Doncaster Works. Mr. Baker attended a works pupils' course at Sheffield University. He saw service at Gorton, Tuxford, Southend, and Liverpool, and in 1935 was made Technical Assistant to the Locomotive Running Superintendent (Southern Area), L.N.E.R. In 1937 he became Assistant District Locomotive Superintendent, Ardsley, and in 1942 took up a similar position at Cambridge. In 1944 he was made Assistant to the Locomotive Running Superintendent (Eastern Section), Shenfield; in 1945, District Locomotive Superintendent, Peterborough; and, in 1946, District Locomotive Superintendent, Gorton. Last November he was re-designated District Motive Power Superintendent, Gorton.

LONDON MIDLAND REGION APPOINTMENTS
Mr. S. H. Scholes, Assistant (General), Labour & Establishment Office, Euston, to be Assistant Chief Officer for Labour & Establishment, Euston.

Mr. J. Blair, Assistant Mechanical & Electrical Engineer, Scottish Region, to be Carriage & Wagon Engineer, Derby.

Mr. S. T. Clayton, District Motive Power Superintendent, Glasgow (North), to be Assistant Motive Power Superintendent, Euston.

Mr. J. M. Harrison, Architect to the Civil Engineer, Kings Cross, to be Architect, Civil Engineer's Department, Euston.

Mr. G. F. Kent, District Engineer, Irvine, to be District Engineer, Leeds.

Mr. H. Varney, Chief Commercial Clerk, District Goods & Passenger Manager's Office, Derby, to be Assistant to District Goods & Passenger Manager, Derby.

Mr. J. A. Owen, Head Office Inspector, Office of Divisional Motive Power Superintendent, Derby, to be Assistant District Motive Power Superintendent, Toton.

Mr. F. Walton, Stationmaster, Liverpool (Central), to be Assistant to District Operating Superintendent, Liverpool (Cheshire Lines).

Mr. J. W. L. Thorley, Assistant Stationmaster, Crewe, to be Assistant to District

Operating Superintendent, Liverpool (Lime Street).

Mr. C. Leckenby, Assistant District Controller & District Inspector, Abergavenny, to be Assistant to District Operating Superintendent, Rotherham.

Mr. Ernest Alexander Milne, who was recently appointed Carriage & Wagon Engineer, Scottish Region, British Railways, was educated at Derby Secondary School and Derby Technical College, and entered the service of the Midland Railway at Derby Carriage & Wagon Works, where he served an engineering apprenticeship. After a number of appointments, including that of Assistant Works Manager, Mr. Milne was appointed Works Superintendent, Barassie Wagon Works, and subsequently became Carriage & Wagon Outdoor Assistant to the Mechanical Engineer (Scotland), L.M.S.R. He has served on several important committees in connection with the maintenance of railway wagons.

FUNERAL OF SIR RALPH COPE

The funeral service for Sir Ralph Cope, Chief Accountant of the Great Western Railway from 1916 to 1938, who died on February 14, was held on February 18 at St. Gabriel's Church, Cricklewood, and was followed by cremation at the Golders Green Crematorium. Among those who attended the service were:—

Lady Cope; Mr. and Mrs. Todd (son-in-law and daughter); Mr. C. Needham (formerly of General Manager's Office, G.W.R.); Mr. K. W. C. Grand, Chief Regional Officer, Mr. C. R. Dashwood, Chief Accountant, Mr. G. Matthews, Operating Superintendent, and Mr. C. Furber, Commercial Superintendent, Western Region; Mr. H. Simons (representing Mr. W. P. Keith, Manager, Hotels & Catering Department, Western Region); Mr. G. Morton, Chief Financial Officer, Railway Executive; Dr. H. H. Cavendish Fuller, Chief Medical Officer, Railway Executive; Mr. F. R. E. Davis, formerly Secretary, G.W.R.; Mr. W. H. Anglessey, formerly Audit Accountant, G.W.R.; Mr. W. C. Dent, formerly Assistant to Accountant, G.W.R.; Mr. E. R. Pole, formerly of Chief Accountant's Office, G.W.R.; Mr. J. C. Harris, formerly Chief Clerk, Solicitor's Office, G.W.R.; Mr. J. A. Kay, Editor, *The Railway Gazette*; Mr. R. G. Davidson, formerly Chief Accountant, Southern Railway.

Modernised Ticket Office at Bowes Park, Eastern Region

A prototype which represents a new conception of the ticket office, enhancing its value to the public and aiding the staff in giving prompt service

The latest addition to the series of modernised ticket offices in the Eastern Region of British Railways was opened at Bowes Park Station on February 18 by the Mayor of Wood Green, Councillor W. Evans, who was accompanied by Mr. C. K. Bird, Chief Regional Officer, Eastern Region, British Railways.

Besides the issue of tickets, the office deals with parcel reception and is used also by the stationmaster during his periodical visits from Wood Green, the controlling station, to which Bowes Park is "linked."

The office is rectangular, with one of the shorter sides facing the public. This office face is entirely glazed above counter

Suitably-designed fittings are built into the office and, at the end farthest from the public, two fittings are used to screen, on the left, a staff messing coupé and, on the right, the stationmaster's desk.

The fittings are carried out entirely in natural oak finish. Every fitting, drawer and shelf is numbered as part of an office indexing system which enables every item which is used regularly in the office, including books and forms, to be found without delay.

Lighting is by fluorescent tubes of "natural" tint. In conjunction with this, the walls and ceiling of the office are finished in primrose. Heating is by independently-switched electric convective heaters. On lighting, heating, ventilation—the office has electric vent fans—and other matters of welfare the advice of Dr. J. Sharp Grant, Chief Medical Officer, Eastern Region, has been taken.

The design, lay-out and equipment of the office have been carried out by collaboration between Mr. C. Dandridge, C.V.O., Commercial Superintendent; Mr. J. Campbell, Civil Engineer; and Mr. H. H. Swift, Electrical Engineer, Eastern Region.

The Bowes Park office will be used by the Commercial Superintendent's Research Section as a testing station in connection with the standardisation of office design and practice and mechanisation of passenger and parcel booking.

At present a prototype ticket-dating machine provided by the Bell Punch Co. Ltd., Uxbridge, is under test in the Bowes Park office. The usual type of dating press, operated by manual pressure, requires the expenditure of physical energy out of all proportion to the work accomplished. The electric machine has been designed to reduce the expenditure of energy to the minimum.

To issue a dated ticket, the booking clerk inserts it in the machine to about a quarter of an inch. This action starts the operating mechanism which instantaneously takes the ticket from the clerk, dates it at both ends and delivers it from a slot to the waiting passenger.

Mr. C. K. Bird, Chief Regional Officer, Eastern Region, British Railways, in welcoming the Mayor of Wood Green, said that it was the first time, to his recollection, that the Mayor of an important borough had honoured them by visiting, and inaugurating, a new feature of railway working.

For a long time they had been conducting research into station offices with a view, first, to improving their value to the travelling public and, secondly, to aiding the staff in giving prompt and good service to their customers. They believed that these aims could best be achieved by regarding the ticket office primarily as a shop where transport is sold and fitting it out as one would equip a retail store.

The natural oak woodwork, the primrose walls, the slightly pink fluorescent lighting, and the rubber flooring were the outcome of medical and technical research towards the ideal environment for the clerks who, in serving the public, staff the office almost continuously.

The result was an example of what had been achieved by thoughtful collaboration between departments.

Accelerated Weathering Tests for Assessing Paint Durability

(Concluded from page 208)

moved in and out in the same manner and also can be raised and lowered by means of two self-sustaining hand winches. For protection against water splashes the arc lamps are fitted with shields. The arc lamps are so arranged that each of the three can be irradiated by a carbon arc lamp, or the machine can be operated with two arcs opposite and two upper racks, or in an extreme case all four arcs can be arranged opposite the top rack. Normally two racks are used, and specimens on each are subject to the light from two carbon arc lamps.

The control panel is arranged so that each arc lamp has its own switch and fuses, ammeter, voltmeter and choke. A smaller 10-amp. switch is fitted to control the motor. A watt/hour meter is placed centrally on the panel and the whole apparatus is designed suitably for mounting on a wall.

The machine is fitted with a drum revolution counter, actuated by a cam, which can be reset to zero if desired at the outset of each test. Further arrangements have been made to facilitate the lubrication of the rollers, gear box and all necessary moving parts of the machine. An earthing terminal is provided on the frame, as with four arc lamps and water sprays there is always the possibility of considerable build-up of static and induced current.

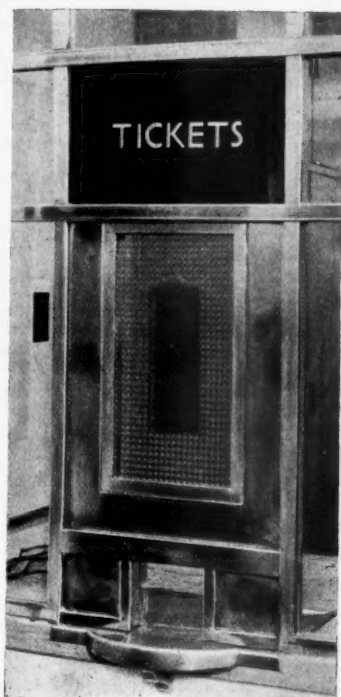
Conclusions and Summary

A single accelerated cycle in general will not give sufficient data for the assessment of the value of a paint under a wide range of conditions, and a series of three cycles is suggested to correspond with (a) rural, (b) industrial, and (c) highly corrosive conditions. In choosing among the many cycles tried the criterion has been the production of failures similar in character to those experienced in practice. The end point of the test should coincide with the condition at which in practice repainting would take place.

In all cases it is regarded as essential to expose a paint of known performance for the purpose of comparison, as the probable life of any paint in a given instance is influenced by the weather conditions experienced, and it is misleading to give a direct estimate of the paint life, although its relative merits can be established definitely.

The special features of the new accelerated weathering machine include its large capacity per unit of floor space, for instance, although occupying approximately the same floor space as the machine previously used, it has twice the capacity. Its flexibility of operation is an important aspect, and it is possible to vary the speed of rotation, the distance between lamp and specimen, and the number of lamps opposite the uppermost rack from one to four. The water sprays are specially designed to give uniform wetting; the volume of water used is sufficient to prevent any build-up of solids from the water.

Although this machine has been in use for only a short period it is already apparent that the results compare with those obtained with the machine formerly used. It is felt that this type of machine should be seriously considered by all interested in the study of accelerated weathering tests, and it is hoped that it may prove eventually to be at least the forerunner of a really satisfactory standardised machine.



"Hygiaphone" ticket window

height, following the usual Eastern Region practice, and fitted into it is a hygienic booking window, the "Hygiaphone," a French invention for the protection of office staff and public from infection by breath. The front has also a luggage rest and, above the window, an electric clock.

To the right of the glazed front is a door admitting the public to an inquiry and parcel counter. Full admission to the office is prevented by a security gate at the end of the public corridor.

The counter is of the "double-deck" type; the top deck is available to the public for handing in parcels, filling in forms, etc. The lower deck, used by the booking clerk, is of normal counter height and enables essential books in current use to be available out of sight of the public. One end of the counter is lowered to assist in handling parcels and save clerical energy. A weighing machine is sunk into this portion.

British Transport Commission Statistics

Summary of the principal statistics for
the four-week period ended December 26

Number 13 of *Transport Statistics** covers the period to December 26 and completes the 1948 series. In our issue of January 14, we dealt with the traffic receipts for 52 weeks of 1948, and in our last week's issue we commented on the additional data contained in Table I. The staff statement shows a reduction of 3,295 in the number of the Commission's employees during December. As in the previous period, British Railways effected the bulk of this economy, though London Transport employed 118 fewer people and the Railway Clearing House cut out 99 posts.

Passenger journeys originating in the month of November increased by 146,000.

* British Transport Commission Statistics, 1948. Series No. 13. Period to December 26. London: British Transport Commission. Price 1s.

or 0.2 per cent. The increase was in cheap travel, so that the corresponding takings decreased by £282,000, or 3.6 per cent.

Freight tonnage originating in December improved by 2,790,000 tons, or over 14 per cent. From Table 2 (B), it will be seen that minerals and coal accounted for most

of the additional traffic, though, for the first time since March, merchandise tonnage was larger. The Eastern Region, which lost much of its high-class merchandise in earlier months, increased its forwardings in December by nearly 11 per cent. It also sent out 478,000 more tons of coal & coke, representing a remarkable improvement of 29.76 per cent. Its mineral traffic was 16.75 per cent. heavier, so that altogether the Region originated 3,512,000 tons, an advance of close on 23 per cent. The North Eastern

STAFF

	Commission's Head office	British Railways	London Transport	Hotels & Catering	Steamships Marine & Docks	Inland Waterways	Railway Clearing House	Total
Administrative ...	138	79,352	4,896	1,890	2,157	724	609	89,766
Operating ...		343,548	61,045		14,945	1,730		421,263
Maintenance & construction ...		212,284	30,999		7,425	2,920		253,628
Others ...	14	14,608	3,863	14,382	155	20	155	33,197
Total ...	152	649,792	100,803	16,272	24,682	5,394	764	797,859

I. BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks to December 26		Inc. or dec.	Aggregate to December 26		Inc. or dec.
	1948	1947		1948	1947	
	£000	£000	£000	£000	£000	£000
British Railways—						
Passengers ...	8,231	8,878	— 647	121,913	115,943	+ 5,970
Parcels, etc., by passenger train ...	2,254	2,246	+ 8	29,222	26,520	+ 2,702
Merchandise ...	6,500	6,472	+ 28	83,673	75,680	+ 7,993
Minerals ...	2,323	2,001	+ 322	29,171	22,279	+ 6,892
Coal & coke ...	5,404	4,849	+ 555	67,203	56,815	+ 10,388
Livestock ...	169	96	+ 73	1,366	1,133	+ 233
	24,881	24,542	+ 339	332,548	298,370	+ 34,178
Steamships ...	555	524	+ 31	9,601	8,646	+ 955
Inland Waterways ...	143	144	— 1	1,729	1,571	+ 158
Hotels & Catering ...	972	944	+ 28	13,293	12,448	+ 845
London Transport—						
Railways ...	1,163	1,123	+ 40	14,607	13,363	+ 1,244
Buses & coaches ...	2,253	2,260	— 7	31,486	28,799	+ 2,687
Trams & trolleybuses ...	826	832	— 6	11,213	10,507	+ 706
	4,242	4,215	+ 27	57,306	52,669	+ 4,637
Total ...	30,793	30,369	+ 424	414,477	373,704	+ 40,773

Region handled a tonnage which was 18.28 per cent. higher, but it should not be overlooked that the London Midland Region, with an increase of 12.67 per cent., was responsible for more than one-third of the total freight traffic on British Railways. Net ton miles advanced by nearly 12 per cent., but only 8.7 per cent. more freight train miles were worked. The result was that the average train load reached the record figure of 162.3 tons, an improvement of 40 tons on the 1938 train load.

Freight train speed fell to 7.39 m.p.h.—better than 1947, but below November, in all Regions, no doubt partly due to December fogs. The slow movement was reflected in the consumption of locomotive coal which, at 66.65 lb. per engine mile, was 1.8 lb. above November. The rolling stock position was stronger than in the previous period.

More traffic was conveyed over all Divisions of Inland Waterways, with an average length of transit of 15 miles. London Transport carried 2.26 per cent. more originating passengers, but the total was nearly 3 per cent. below November.

2. BRITISH RAILWAYS

(A) Passenger Journeys Originating in the Month of November

	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Ordinary fares ...	1,356,000 (—7.57)	564,000 (—2.59)	1,756,000 (—3.34)	759,000 (—11.88)	149,000 (—8.27)	293,000 (+5.29)	4,876,000 (—5.57)
Monthly return ...	5,119,000 (—21.13)	1,453,000 (—37.41)	6,055,000 (—16.23)	1,509,000 (—16.71)	359,000 (—42.58)	737,000 (—24.69)	15,232,000 (—21.71)
Excursion, weekend, cheap day, etc. ...	2,244,000 (+283.89)	1,388,000 (+470.28)	2,670,000 (+294.69)	627,000 (+267.78)	536,000 (+322.29)	576,000 (+478.96)	8,021,000 (—323.07)
Workmen ...	7,878,000 (+7.75)	1,786,000 (—4.89)	6,730,000 (+11.44)	1,988,000 (+0.22)	1,015,000 (+2.19)	1,012,000 (+3.49)	20,409,000 (—6.39)
Other descriptions ...	1,151,000 (—21.56)	755,000 (—23.57)	1,196,000 (—24.63)	547,000 (—23.96)	246,000 (—35.45)	328,000 (—15.23)	4,223,000 (—23.63)
Season tickets ...	5,346,000 (—3.05)	1,796,000 (—11.03)	9,503,000 (—8.49)	1,816,000 (—5.44)	549,000 (—11.19)	1,633,000 (—3.55)	20,693,000 (—6.29)
Total ...	23,094,000 (+1.14)	7,742,000 (—3.57)	27,910,000 (+0.64)	7,226,000 (—3.15)	2,853,000 (—1.81)	4,629,000 (+6.49)	73,454,000 (—0.20)

(B) Freight Tonnage Originating

	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Merchandise ...	1,296,000 (+5.89)	760,000 (+1.57)	276,000 (+6.68)	693,000 (+10.94)	571,000 (+1.35)	674,000 (—5.89)	4,185,000 (—5.18)
Minerals ...	1,527,000 (+7.08)	640,000 (+11.21)	133,000 (+4.39)	815,000 (+16.75)	811,000 (+20.82)	697,000 (+26.51)	4,613,000 (—14.14)
Coal & coke ...	4,608,000 (+16.92)	2,058,000 (+14.81)	283,000 (+13.96)	2,085,000 (+29.76)	2,447,000 (+22.15)	1,743,000 (+7.50)	13,229,000 (—17.92)
Livestock ...	15,000 (—14.79)	13,000 (+30.38)	6,000 (+40.48)	4,000 (+9.09)	4,000 (+40.00)	19,000 (—10.33)	61,000 (—2.81)
Total ...	7,446,000 (+12.67)	3,471,000 (+11.03)	698,000 (+9.27)	3,512,000 (+22.94)	3,833,000 (+18.28)	3,129,000 (+10.65)	22,088,000 (+14.46)

(C) Net Ton Miles

	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
Merchandise & livestock ...	190,415,000 Per cent. (+13.12)	97,641,000 Per cent. (-3.83)	25,625,000 Per cent. (+2.35)	84,208,000 Per cent. (+16.34)	51,737,000 Per cent. (+3.98)	89,110,000 Per cent. (+7.18)	538,736,000 Per cent. (+7.71)
Minerals ...	141,027,000 (+21.31)	70,151,000 (+15.17)	15,159,000 (-7.32)	94,883,000 (+10.10)	35,072,000 (+25.79)	43,565,000 (+18.10)	399,857,000 (+16.08)
Coal & coke ...	307,835,000 (+18.99)	131,180,000 (+2.06)	26,495,000 (+2.96)	174,724,000 (+19.63)	68,211,000 (+13.83)	71,348,000 (-1.27)	779,793,000 (+12.81)
Total, all classes of traffic ...	639,277,000 (+17.67)	298,972,000 (+2.75)	67,279,000 (+0.23)	353,815,000 (+16.15)	155,020,000 (+12.69)	204,023,000 (+6.10)	1,718,386,000 (+11.88)

(D) Train Miles

	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
Coaching train miles—	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Steam—							
Loaded ...	4,263,000 (+12.11)	2,818,000 (+12.33)	1,479,000 (+14.53)	2,341,000 (+3.77)	971,000 (+4.28)	1,739,000 (+1.52)	13,611,000 (+8.86)
Empty ...	114,000 (+4.95)	123,000 (+6.52)	48,000 (+12.70)	81,000 (-0.07)	41,000 (+15.63)	51,000 (-19.58)	458,000 (+2.59)
Total loaded & empty ...	4,377,000 (+11.91)	2,941,000 (+12.07)	1,527,000 (+14.47)	2,422,000 (+3.64)	1,012,000 (+4.69)	1,790,000 (+0.78)	14,069,000 (+8.65)
Electric—							
Loaded ...	411,000 (+11.64)	—	2,829,000 (+14.08)	21,000 (-59.98)	90,000 (+8.17)	—	3,351,000 (+12.32)
Empty ...	21,000 (-2.93)	—	61,000 (+11.70)	2,000 (+0.91)	10,000 (+1.94)	—	94,000 (+6.82)
Total loaded & empty ...	432,000 (+10.85)	—	2,890,000 (+14.03)	23,000 (-57.75)	100,000 (+7.52)	—	3,445,000 (+12.16)
Freight train miles—							
Loaded ...	3,034,000 (+11.47)	1,609,000 (+7.35)	528,000 (+25.5)	1,634,000 (+8.26)	912,000 (+11.59)	1,431,000 (+0.92)	9,148,000 (+7.88)
Empty ...	525,000 (+12.89)	194,000 (+4.93)	11,000 (-18.28)	311,000 (-2.11)	197,000 (+13.13)	203,000 (-2.73)	1,441,000 (+5.64)
Total loaded & empty ...	3,559,000 (+11.67)	1,803,000 (+7.09)	539,000 (+1.99)	1,945,000 (+6.45)	1,109,000 (+11.86)	1,634,000 (+0.46)	10,589,000 (+7.57)
Total coaching and freight train miles—							
Loaded ...	7,708,000 (+11.82)	4,427,000 (+10.59)	4,836,000 (+10.55)	3,996,000 (+4.63)	1,973,000 (+7.69)	3,170,000 (+1.24)	26,110,000 (+8.94)
Empty ...	660,000 (+10.92)	317,000 (+4.96)	120,000 (+7.14)	394,000 (-1.50)	248,000 (+13.24)	254,000 (-6.61)	1,993,000 (+4.89)
Total loaded & empty ...	8,368,000 (+11.75)	4,744,000 (+10.12)	4,956,000 (+12.71)	4,390,000 (+4.07)	2,221,000 (+8.28)	3,424,000 (+0.62)	28,103,000 (+8.65)

(E) Freight Train Miles per Train Hour

		Region						Total	
		London Midland	Western	Southern	Eastern	North Eastern	Scottish		
1948	1947	1948	1947	1948	1947	1948	1947	1948	1947
6.13	5.82	8.41	7.87	8.29	8.56	7.35	7.04	8.75	8.42
								8.97	8.64
								7.39	7.09

(F) Locomotive Coal Consumption

	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
Tonnage consumed	382,000 Per cent. (+8.08)	183,000 Per cent. (+15.18)	80,000 Per cent. (+13.47)	203,000 Per cent. (-0.14)	96,000 Per cent. (+6.06)	180,000 Per cent. (-2.04)	1,124,000 Per cent. (+6.00)
Lb. per engine mile	68.96 (-2.71)	57.06 (+5.49)	58.39 (+4.92)	69.71 (-2.94)	65.72 (-0.76)	75.85 (-1.53)	66.65 (-0.85)

(G) Rolling Stock Position

	Operating stock	Number under repair	Serviceable stock	Serviceable stock in 1947
Locomotives ...	19,756	3,416	16,340	16,486
Coaching vehicles ...	55,522	5,471	50,051	48,706
Freight wagons ...	1,175,238	112,841	1,062,397	1,058,068

3. INLAND WATERWAYS
Tonnage of traffic and ton-miles

	Tonnage	Per cent.	Ton-miles	Per cent.
General merchandise ...	311,000	(+13.98)	5,143,000	(-7.88)
Liquids in bulk ...	137,000	(+1.31)	2,757,000	(+11.61)
Coal, coke, patent fuel & peat ...	479,000	(+19.84)	6,230,000	(+12.11)
Total ...	927,000	(+14.73)	14,130,000	(+3.82)

4. LONDON TRANSPORT

(A) Passenger Journeys Originating

	Number	Per cent.
Railways ...	51,424,000	(+3.73)
Buses & coaches ...	202,479,000	(+2.67)
Trams & trolleybuses ...	89,781,000	(+0.51)
Total ...	343,684,000	(+2.26)

(B) Rail and Road Car Miles

	Miles	Per cent.
Railways ...	17,592,000	(+9.79)
Buses & coaches ...	23,136,000	(+3.16)
Trams & trolleybuses ...	8,393,000	(+0.66)
Total ...	49,121,000	(+4.99)

Relations between Minister of Transport and British Transport Commission

Sir Gilmour Jenkins reviews position before and after Transport Act, 1947

Sir Gilmour Jenkins, Permanent Secretary to the Ministry of Transport, was the principal guest at a luncheon held by the Institute of Transport at the Connaught Rooms, London, W.C.2, on Tuesday last. Mr. D. R. Lamb, President of the Institute, was in the chair.

The President, in introducing Sir Gilmour Jenkins, reminded his hearers that their guest had succeeded Sir Cyril Hurcomb at the Ministry of Transport when the latter had become Chairman of the British Transport Commission. Sir Gilmour Jenkins had had a long and distinguished career in the Civil Service and from 1941-46 he had been at the Ministry of War Transport as Deputy-Director General for Shipping.

Sir Gilmour Jenkins said that there had been some confusion of thought, both inside and outside Parliament, as to the relationship between Ministers and the various socialised undertakings. In the case of transport, this had occurred partly because the British Transport Commission had come into existence just as wartime control was relaxed.

In general, the function of the Minister in relation to industries could be considered under two headings; these were policy, and administration and regulation. Although in practice policy could not be divorced from administration, it could be discussed separately. As regards policy, so far as it concerned inland transport, the Minister had to watch service to the public to see that it was adequate and orderly, for example, by the institution of licensing control. On the administration and regulation side, he had his responsibilities for safety on the railways and on the roads, and such matters as the maintenance and extension of roads.

From the outbreak of war to December 31, 1947, the Ministry of Transport had controlled the railways. On January 1, 1948, the British Transport Commission had taken over that control. The special powers which the Minister had now (in relation to the Commission) were embodied in the Transport Act, 1947, and arose from the fundamental decision that transport should be run by a corporation and not by a Government department, as was the case of the Post Office. This was because transport was an industry which had to be flexible and had to take risks, and as such it was unsuitable for administration by a Government department.

The powers of the Minister might now be said to fall under five heads. In the first place, he had to be supplied with information. It was laid down in the Act that he must be furnished with returns and accounts; the British Transport Commission had to make an annual report and provide periodical statistics, and the Central Transport Consultative Committee also had to make a report to the Minister.

Secondly, he had power of appointment; he appointed the Commission, the Executives, the Central Transport Consultative Committee, and the Coastal Shipping Advisory Committee. He decided what Executives there should be; his consent was necessary to certain acquisitions and area schemes.

Thirdly, he had financial powers; the Minister's approval had to be obtained for large programmes of re-organisation or development; he controlled borrowings

and the issue of stock and laid down forms of accounts and the scheme of audit. During the transition period he could, if he deemed it necessary, authorise changes in charges before the new charges schemes had been drawn up.

Fourthly, he had powers of regulation and could make regulations dealing with procedure under Part III of the Act and relating to pensions.

Fifthly, he had powers to give general directions on matters affecting the national interest. It was necessary to secure his approval to B.T.C. methods of training and research, and he had power to give directions on matters reported to him by the Central Transport Consultative Committee and the Coastal Shipping Advisory Committee.

Sir Gilmour Jenkins said it was probable that Parliament would insist on debating the reports of the British Transport Commission and the Central Transport Consultative Committee. The Minister would then have to answer for the B.T.C. There were some difficulties in the position, since some of the matters which might be debated were not under the Minister's control, but he thought that a commonsense compromise method would be found of dealing with it. There were two views which could not easily be reconciled. On the one hand, to be successful, transport had to be run on commercial and not on Government lines, to be given a large measure of freedom of action, and to be free from ministerial control in its day-to-day administration. On the other hand, there was an understandable feeling that since transport had become State-owned there should be closer control exerted by Parliament than there had been under private enterprise. The debate would no doubt go on for some time to come.

Swiss Federal Railways

New London offices of the Swiss National Tourist Agency & Swiss Federal Railways

Mr. H. O. Ernst, London Manager, Swiss National Tourist Office & Swiss Federal Railways, entertained a number of British and Continental press representatives at a cocktail party on Monday evening for a preview of the new premises of the Swiss National Tourist Office & Swiss Federal Railways at 458/9, Strand, which will be formally opened about the end of March.

Towards the end of the 19th century the Jura Simplon Railway Company of Switzerland opened an office in Shaftesbury Avenue to advise tourists going to the district served by its lines. With the nationalisation of the five most important railway companies in Switzerland in 1902 this office was taken over by the newly-created Swiss Federal Railways. Soon after, the office was transferred to 11B, Regent Street.

The outbreak of the war in September, 1939, stopped holiday traffic to Switzerland, and it was decided to keep open the Swiss Tourist Office in London with a greatly reduced staff, and more than half the office accommodation (first floor, Carlton House) was sublet.

Throughout the war years the public office was never empty of visitors. Although travel to Switzerland for pleasure

purposes was out of the question, a large number of pre-war clients went to the offices to refresh their memory by collecting pamphlets and folders and to make tentative plans for holidays after the war.

After the end of hostilities the demand for holidays in Switzerland was overwhelming and increased as time went on. The office accommodation left for serving the public became inadequate. After lengthy negotiations, new premises were found in "Golden Cross House," 458, Strand, and the necessary building operations (structure alterations and redecoration) commenced in April, 1948. On December 1 last year the administrative section of the Swiss National Tourist Office & Swiss Federal Railways moved in, whilst the Booking Office and Ticket Department remained at 11B, Regent Street, until Saturday, February 19, 1949. From Monday, February 21, the whole organisation was brought under the same roof in the Strand. The design of the offices is modern yet practical, and the conception of the Swiss architect, Mr. A. Roth, who, in close co-operation with Messrs. T. B. Bennett & Son, his collaborators in London, achieved results which are a credit to both.

Financial Position of Thomas Tilling Limited

In his statement issued with the annual report for the year ended December 31, 1948, Sir J. Frederick Heaton, Chairman & Managing Director of Thomas Tilling Limited, gives full details of the sale of the transport interests of the company to the B.T.C., and the proposals for the special capital profits dividend of £20,806,000 referred to briefly on page 196 of our February 18 issue.

The consolidated balance sheet shows total assets of £28,707,347, of which £20,806,000 is represented by British Transport 3 per cent. guaranteed stock, 1968-73, which is to be distributed on April 1 to ordinary stockholders in the proportion of £5 nominal for each £1 held. Interest to that date will be received by the company.

The remaining assets, after the proposed distribution amount to £7,901,347. The accounts of Cornhill Insurance Company in which Thomas Tilling has a substantial interest are not included in the consolidated accounts.

The necessary resolution will be submitted at a meeting to be held at Caxton Hall, Westminster, S.W., on March 17, when resolutions will also be submitted to amend the articles of association and provide for compensation, amounting to £38,000, to the directors for the loss of office.

The proposed payments are: Sir Frederick Heaton, £25,000; Lord Brabazon, £1,000; Lord Hacking, £2,500; Mr. W. Wolsey, £3,500; Mr. G. Cardwell, £4,500; and Mr. S. Kennedy, £1,500.

CANADIAN PACIFIC RAILWAY COMPANY.—At a meeting of the Board of Directors held on February 14, a final dividend of 3 per cent. (75 cents per share) on the ordinary capital stock in respect of and out of earnings for the year 1948, was declared payable in Canadian funds on March 31, 1949, to shareholders of record on February 25, 1949. The directors again point out that net earnings from rail operations are insufficient for the payment of any dividend. The dividend is attributable entirely to income from sources other than rail operations.

Parliamentary Notes

British Transport Commission Bill

In the House of Commons on February 1 the British Transport Commission Bill was presented and read the first time. The object of the Bill is "to empower the British Transport Commission to construct works and to acquire lands; to empower the Mersey Docks & Harbour Board to dispose of certain lands to the Commission; to make provision as to the rates dues and charges leviable by the Commission at certain of their docks; to authorise the closing for navigation of portions of certain inland waterways; to amend in certain respects the River Lee Water Act, 1855, as amended by subsequent enactments; to extend the time for the compulsory purchase of certain lands, the completion of certain works, and the exercise of certain powers; to confer further powers on the Commission; and for other purposes."

Petitions against the British Transport Commission Bill have been deposited in the Private Bill Office of the House of Commons by the Imperial Chemical Industries Limited; Stewarts and Lloyds Limited; Battersea Borough Council; Deptford Borough Council; Ealing Corporation; Haberdashers' Company and others; Middlesex County Council; London County Council; Gas, Light & Coke Company; Conservators for the Regulation of Oxshott Heath; and Esher Urban District Council.

Railway & Canal Commission (Abolition) Bill

The House of Lords on February 1 agreed to the amendment made by the House of Commons to the Railway & Canal Commission (Abolition) Bill. The amendment provided that "The Lord Chancellor may pay, out of moneys provided by Parliament to or in respect of any person who suffers loss of employment in consequence of the abolition of the Commission and as to whom the Lord Chancellor, with the approval of the Treasury, determines that such provision should be made, such pension as he may so determine."

Questions in Parliament

Members of Parliament and Railway Passes

Mr. D. L. Lipson (Cheltenham—Ind.) on February 10 asked the Chancellor of the Exchequer if, in view of the fact that the railways had been nationalised, he would provide Members of Parliament with a pass between their constituencies and London, and so save the time, labour and paper involved in the present practice whereby a ticket had to be obtained for each journey.

Mr. Glenvil Hall (Financial Secretary to the Treasury): No. I do not consider that the savings mentioned would justify the extra cost to the Exchequer of such an arrangement.

Mr. Lipson: Can the Financial Secretary say how it would involve any additional public expenditure in view of the fact that the railways are nationalised, and that any profit would go to the State and any loss would be made up out of public funds?

Mr. Glenvil Hall: That is the error into which Mr. Lipson has fallen. Railway deficits, if any, do not fall on the Exchequer.

Mr. Lipson: Will the Financial Secretary

to the Treasury say on whom they do fall?

Lieutenant-Commander Gurney Braithwaite (Holderness—C.): Can the Financial Secretary tell the House whether there has been any change in comparative prices of season tickets and ordinary return tickets since the railways were nationalised last year?

Mr. Glenvil Hall: If Lt.-Commander Braithwaite will put down that question I shall be happy to answer it.

Mr. F. J. Bellenger (Bassetlaw—Lab.): Is the Financial Secretary aware that season tickets are already issued to Members of this House who care to apply for them at least for a distance of 25 miles away, because I, personally, used to have a season ticket when I travelled up frequently from my home to Parliament?

Mr. Glenvil Hall: That, of course, is true, but to make it worth while and not an extra charge it is essential that Members should travel at least four days in any one week. That is necessary in order to make the issue of a season ticket an economic proposition.

Mr. Cecil Poole (Lichfield—Lab.): Would the Minister give consideration to the practice which is being followed in the take-over of undertakings whereby an average over a number of years is taken? Would he consult with the Transport Commission and try to arrive at a figure which represents an average amount paid for Members travelling and then allow the issue of a season ticket, or some form of annual ticket, on that basis without any loss to the Transport Commission or any charge on the Treasury?

Mr. Glenvil Hall: That is an interesting suggestion, but it has nothing to do with the question which I was asked and which is on the Order Paper.

Mr. Wilson Harris (Cambridge University—Ind.): Since any Member can travel as frequently as he likes to his constituency by filling up forms, what possible difference would it make, except extra convenience, to give him a permanent railway pass?

Mr. John Lewis (Bolton—Lab.): In view of what is obviously a widespread feeling in the House that Members of Parliament should have season tickets—(cries of "No")—would the Financial Secretary look at this matter once again?

Mr. Emrys Roberts (Merioneth—Lib.): Can the Minister say whether he has in fact asked the Transport Commission whether they would issue a season ticket at a special rate? If he has not, would he be prepared to approach them on this matter?

Mr. Glenvil Hall: This matter has been gone into on more than one occasion, and fairly recently, and I see no reason why I should again approach the Minister of Transport to discuss this matter in view of the facts which are obvious, or should be obvious, to Members.

Orders of Steel Rails for the East African Railways

Brigadier O. L. Prior-Palmer (Worthing—C.) on February 9 asked the Secretary of State for the Colonies what were the outstanding orders of steel rails for Tanganyika and Kenya; and to what extent had such orders been met in the last six months.

Mr. A. Creech Jones (Secretary of State for the Colonies): There are outstanding orders for 4,580 tons of rails for the Tanganyika section of the East African Railways but none for the Kenya section. During the last six months, 1,500 tons of rails have been supplied for use in Tanganyika, and 5,500 for Kenya.

Brigadier Prior-Palmer: Having regard to the recent despatch of a large consignment of steel rails to Russia, will not the Colonial Secretary use his influence to see that first priority is given in this respect to the needs of our Colonial territories?

Mr. Creech Jones: That is a larger question so far as the Colonial Empire is concerned. As regards Tanganyika, the rate of flow is in accordance with the arrangements made by the contract.

Presentation to Mr. Paul Gibb on his Retirement



On February 11, Mr. Paul Gibb, M.C., retiring from the position of Goods Manager, North Eastern Region, British Railways, was the recipient of an antique Worcester tea and coffee service. In the photograph reproduced above, Mr. Gibb is seen on the left, with Mr. C. P. Hopkins, C.R.O., in the centre, and Mr. C. M. Jenkin Jones, formerly Divisional General Manager, North Eastern Area, L.N.E.R., on the right.

Notes and News

Assistant Engineers Required.—Assistant engineers, between 25 and 35 years of age, are required by Pauling & Co. Ltd. for a tour of 15 to 24 months in East Africa. See Official Notices on page 223.

Railway Students' Association.—At a meeting of the Railway Students' Association, London School of Economics & Political Science, Houghton Street, Aldwych, on March 9, Mr. F. G. Hole, Member, Hotels Executive, will read a paper on: "Hotels and their Relationship to Transport."

Institute of Transport, Metropolitan Section.—A paper entitled: "Traders and the Transport Act, 1947" will be read by Mr. A. G. Marsden before the Institute of Transport, Metropolitan Section, on March 7. The meeting will be held at Livingstone House, Broadway, London, S.W.1, at 5.30 for 6 p.m.

G.W.R. (London) Operatic Society.—Between February 23 and 26, at the New Scala Theatre, Charlotte Street, London, W., the G.W.R. (London) Operatic Society is presenting: "The New Moon," Romberg's musical play set in eighteenth century Louisiana. The musical director is Mr. Stanley Cheffins, who is in charge of the retired Western Region railwaymen's pension fund. The comedy rôle of Alexander is being taken by Mr. Ronald Ratcliffe of the Chief Regional Officer's staff, and Miss Audrey Davies, a typist in the Staff Welfare Office, a newcomer to the Society, will play the rôle of Clotilde.

Southern Region Snow Ploughs.—Two snow ploughs for use on the Southern Region of British Railways have been built at Ashford Works. These ploughs, which are 27 ft. 3 in. long overall, were built mostly of timber, with the outer sheeting sheathed in steel plate at certain points, as is shown in the photograph reproduced below. The plough can be worked in either direction. Contact with the locomotive or other adjoining vehicle is made at either end of the plough by means of a section of the inclined portion which is raised into position by the de-

tachable torque shown and forms a buffer beam. The tare weight of the plough is 18 tons.

British Railways Oppose Applications for Private Horse Box Licences.—Application by eight racehorse trainers for road transport "B" licences at York was opposed by British Railways, represented by Mr. W. A. Goss. Major F. S. Eastwood, Yorkshire Traffic Commissioner, adjourned the case until March 29 so that full investigation could be made into incidents concerning railway horse boxes which had been mentioned in evidence.

Railway Benevolent Institution Annuities.—The board of the Railway Benevolent Institution, on February 16, granted annuities to nine widows and seven members amounting to £284 5s. a year, one gratuity to a widow amounting to £10 3s., and authorised 20 grants amounting to £169 from the Special Benevolent Fund in cases of immediate need. Grants made from the Casualty Fund during the month of January totalled £757 1s.

Boxing Champions of the L.M.R.—For a boxing tournament held in Derby Works canteen on February 12 there were 73 entries from all parts of the Region, including three from Dublin. Among those who saw the bouts were Messrs. G. L. Darbyshire, Chief Regional Officer; H. G. Ivatt, Mechanical Engineer; J. W. Watkins, Operating Superintendent, Euston; and H. J. Comber, Chief Officer for Labour & Establishment. The eight L.M.R. champions will contend for the All-Railway Championship in London in March.

York Railway Lecture & Debating Society.—Mr. David Blee, Member, Railway Executive, read a paper: "British Railways and the Transport Act, 1947," at a meeting of the York Railway Lecture & Debating Society on February 15, which was presided over by Mr. J. E. M. Roberts, Passenger Manager, North Eastern Region. Mr. Blee said that the paper he was reading was one which he already had given to the Institute of Transport, in London, some time ago, with additions to bring it up to date. His paper was mainly factual, but he hoped it also would be sufficiently provocative to stir his audience into debate. A lively

discussion followed and Mr. F. T. Gray, Carriage Manager, North Eastern Region, expressed a vote of thanks to Mr. Blee for his ready acceptance of the invitation to speak to the Society and for the quality of his address.

British Railways' Exhibit at Ideal Home Exhibition.—The British Railways' exhibit at the Ideal Home Exhibition, which is to be held at Olympia, London, from March 1 to March 26, will include an O-gauge layout, with two electric train sets running a continuous automatic shuttle service over 20 ft. of track, nine 2½-in. scale model freight vehicles, and a 3½-in. scale model of the London Midland Region diesel-electric locomotive, No. 10000.

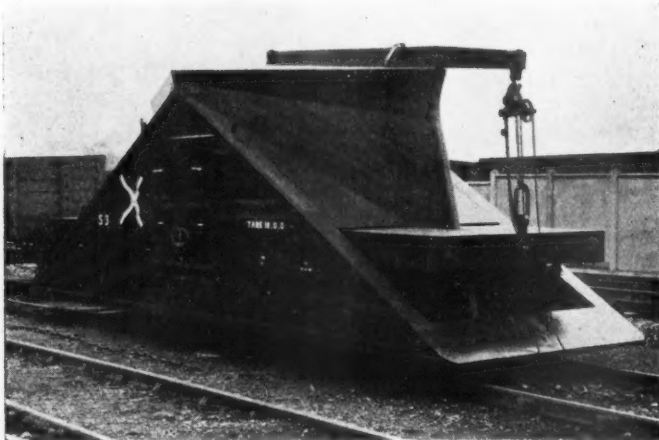
London Traffic Problem.—The twenty-third annual report of the London & Home Counties Traffic Advisory Committee, for the year 1947-1948, commends the improved travelling facilities provided by the opening of the Central Line extensions from Leytonstone to Woodford and Newbury Park in December, 1947, and from Newbury Park to Hainault in May, 1948. The report, which is concerned in the main with road transport problems in the London area, stresses the importance of providing adequate parking space for heavy commercial vehicles off the highway in the vicinity of drivers' cafés and "pull-ups."

Visit of M.P.T.A. Joint Electricity Distribution & Collection Committee to B.I. Callender's Works.—When the Joint Electricity Distribution & Collection Committee of the Municipal Passenger Transport Association (Inc.) and the Public Transport Association (Inc.) held its quarterly meeting at St. Helens, Lancs., recently, the members visited the works at Prescott of British Insulated Callender's Cables Limited. Headed by Mr. H. J. Troughton (South Shields), Chairman of the Committee, the members saw the refining of blister copper, drawing of contact wires, and production and assembly of trolleybus overhead line fittings.

Empire Tourist Campaign.—At a press conference in London on February 21, Lord Hacking, Chairman of the Travel Association, who has just returned from a tour of South Africa and Southern Rhodesia, spoke of a travel plan to embrace the Empire, as a development of the purely national "Come to Britain" campaign. He looked forward to an expanding two-way tourist traffic between South Africa and Rhodesia and the United Kingdom, as, with expansion of air and sea services, passenger capacity equals that of before the war. It is estimated that approximately 80,000 Commonwealth and Empire visitors came to this country in 1948, and a substantial increase is expected as shipping services increase.

Serious French Train Accident.—Forty-three persons were killed or died of their injuries and more than 100 were injured, 26 of them seriously, in an accident during the night of February 18 at Port d'Atelier, a junction near Vesoul, where the line from Nancy to Dijon joins the main line from Paris to Belfort and Basle. The accident, the worst in France for a long time, occurred when an engine, running light, came into collision with an express from Metz to Dijon. The two engines were overturned and fell off the embankment on which the line runs at that point. The first and second coaches of the ex-

Southern Region Snow Plough



Snow plough, weighing 18 tons and 27 ft. 3 in. in length, built at the Ashford Works of the Southern Region, British Railways (see paragraph above)

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

PAULING & CO. LTD. require for 15-24 months' tour in East Africa, commencing May, 1949, Assistant Engineers, age 25-35, with Railway Construction experience preferred. Write giving full particulars, copy reference.—26, Victoria Street, S.W.1. quoting A.R.26.

FIRST PRINCIPLES OF RAILWAY SIGNALING. By C. B. Byles. Most treatises on railway signalling are intended for the railway signal engineer, but this is an elementary treatise. Cloth. 7½ in. by 5 in. 146 pp. Illustrated. 4s. By post 4s. 3d.

press, which were of wood, were crushed between the steel luggage van in front of them, next to the engine, and a postal van behind them, which, like the rest of the train, was all-steel.

Engineers' Guild, Northern Branch.—A discussion on: "The Guild as an Association of Professional Engineers," will be followed by the inauguration of the Engineers' Guild, Northern Branch, at Newe House, Pilgrim Street, Newcastle, on March 3, at 6 p.m. The chairman will be Mr. J. E. Hodgkin and speakers will be Messrs. W. A. M. Allan and J. H. W. Turner.

Institute of Transport Examinations.—The Institute of Transport reminds student and graduate members that March 1 is the closing date for the receipt by the Institute of completed entry forms for the examinations to be held on May 2, 3, and 4, 1949. The Institute states that the addresses of examination rooms at centres in Great Britain and Ireland should be obtained from the March, 1949, issue of its Journal.

Cheaper Fuel Oil Announced.—Shell-Mex and B.P. announce a further reduction in the prices of fuel oils to inland buyers, as from February 15, of ½d. a gal. or 10s. a ton, for B.P. Britoleum, Shell heavy fuel oil, and B.P. heavy fuel oil. Previous reductions for Pool fuel oil, branded now as B.P. Britoleum, were ½d. a gal. on November 16 and ½d. a gal. on January 3, while for Pool heavy fuel oil there were reductions of ½d. a gal. on November 16 and ½d. a gal. on January 3.

Closure of Some County Down Lines Foreshadowed.—The discontinuance of all the services of the Belfast & County Down Railway, with the exception of the Bangor line, is envisaged in a letter which has been addressed by the Ulster Transport Authority to a number of local authorities in the county inviting them to a conference on road and railway services. It states that investigations have been made into the question of railway and road services in County Down, and it appears inevitable that the railway services, other than the Bangor line of the B.C.D.R., will have to be discontinued gradually. The letter adds that the annual loss in operating the B.C.D.R. line is now approximately £100,000. Already, opposition to proposal is becoming manifest. In Newcastle strong representations are under consideration to prevent the closing of the line, which, it is believed, would cause great harm to the tourist trade of the town. Mr. Brian Faulkner, Member of Parliament for East Down, has said that

the new Transport Authority had been given power to close parts of the line, yet the company, before acquisition, had been precluded from doing so.

4-8-2 CLASS "15F" LOCOMOTIVE FOR THE SOUTH AFRICAN RAILWAYS. The latest examples of these main-line passenger and freight locomotives have been built by the North British Locomotive Co. Ltd. Reprinted from *The Railway Gazette* of September 20, 1946. Price 2s. By post 2s. 2d.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d.

Institution of Locomotive Engineers South American Centre.—At the recent annual general meeting of the South American Centre of the Institution of Locomotive Engineers, it was decided that changed conditions did not warrant the continuance of the Centre, and it was resolved therefore to wind up its affairs during the course of the coming year, after which members resident in Argentina, Uruguay and Paraguay will revert to the parent body.

Institute of Transport Annual Dinner.—It was decided, because of catering restrictions, not to hold the annual dinner of the Institute of Transport in 1948, but the council is glad to announce that this function has been resumed for this year. The annual dinner will take place on Friday, March 18, 1949, at the Connaught Rooms, Great Queen Street, London, W.C.2. Particulars and tickets may be obtained from the Secretary of the Institute, 80, Portland Place, London, W.1.

Miners' Lamps for Locomotive Depots.—Experiments are being carried out by British Railways at selected Motive Power Depots in the use of miners' lamps by men called on to work in locomotive pits and at other points where such lamps might be useful. The lamps are attached to specially designed caps. From the caps, leads run to small batteries carried on belts worn by the men, and switches on the lamps enable either a beam or a diffused light to be used. Hands are thus left free and at the same time improved lighting is provided.

Reed Vibrometer.—The G.E.C. Reed Vibrometer, produced by the General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2, is a small electro-mechanical instrument for studying vibration, particularly that arising in machinery, and uses the phenomena of resonance induced in a thin steel reed. The instrument probe is placed in contact with the vibrating structure, machine frame, floor, and bridge, and the effective length of the reed is varied, by means of the knob on the side of the vibrometer, until resonance is observed visually. The frequency is then read direct on the calibrated scale. Where complex vibration waves exist they may be analysed into components by careful exploration through the instrument's frequency range of 10-250 c/s. (600-15,000 r.p.m.). Amplitudes may be estimated directly from the tip of the reed or if

THE EVOLUTION OF RAILWAYS. Second edition, revised and enlarged. By Charles E. Lee. Traces the germ of railways back to Babylonian times. Cloth, 8½ in. by 5½ in. 72 pp. Illustrated. 6s. By post 6s. 4d.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d.

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffic, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. Price 1s. Post free 1s. 2d.

desired, an electrical output may be obtained from the instrument by connecting the terminals at the top of the Y-plates of a cathode ray oscilloscope. The accuracy of the instrument is claimed to be 5 per cent. at all frequencies. Its weight is 1 lb. 2 oz.

Vickers Limited Final Dividend.—At a meeting of the board of Vickers Limited on February 17, dividends were declared at the rate of 2½ per cent. actual, less income tax, on the preferred 5 per cent. stock, 2½ per cent. actual, less income tax, on the 5 per cent. preference stock, and 2½ per cent. actual, free of tax up to 6s. in the £, on the cumulative preference stock, making in each case 5 per cent. for the year ended December 31 last.

La Guaira & Caracas Railway.—The directors of La Guaira & Caracas Railway announce that because of the need to conserve cash resources, payment of interest on the 5 per cent. debenture stock due March 1 next is deferred pending the receipts of the proceeds from the sale, now under negotiation, of a piece of land in Venezuela. The proceeds are expected to be received in time for payment of the interest in full before the end of April.

Canadian Pacific Railway New Stock.—Between December 20 and January 20 the Canadian Pacific Railway received three 1,000-h.p. diesel-electric shunting locomotives from the Montreal Locomotive Works, and 13 1,000-h.p. diesel-electric locomotives from the Baldwin Locomotive Works for the Esquimalt & Nanaimo Railway. Also received were 17 steel guard's vans from Angus Shops; 508 50-ton wood-lined box cars from the National Steel Car Corporation, eight mail cars from the Canadian Car & Foundry Company, and 108 70-ton triple hopper cars from the Eastern Car Company.

Argentine Locomotive Order Agreement.—The Vulcan Foundry Limited and the North British Locomotive Co. Ltd. have reached agreement with the visiting Argentine delegation on the Argentine order for 90 British locomotives, valued at several million pounds. In January last the Argentine Government requested the companies to suspend work on the order and to report on progress and outlay to date. As a result of talks with Senor Castro, Director-General of the Argentine Ministry of Transport, and Colonel Semeroiz, head of the railway equipment buying organisation, the Vulcan Foundry is going ahead with part of the order, while the North British firm has accepted cancellation. One order was for 60 locomotives of one type, of which

the North British Locomotive Co. Ltd. was to build 20, and Vulcan Foundry Limited 40. The Vulcan works are again in production on the order for 40. North British is understood to have reached an arrangement concerning compensation for work on the order for 20, now cancelled, and states that prospects exist of further contracts in the future. The order for the remaining 30 locomotives, ordered from the Vulcan Foundry has been cancelled. A substitute order for 15 of a different design is probable.

Forthcoming Meetings

February 25 (Fri.).—Institution of Railway Signal Engineers, at the London Transport Executive Signal School, Earls Court Station, London, S.W.5, at 6.15 p.m. "Typical Signal Control Circuits," by Mr. J. P. Loosemore.

February 25 (Fri.).—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 6 p.m. Applied Mechanics and Internal Combustion Engine Groups, and Automobile Division: "Crankshaft Damping," by Dr. P. Draminsky.

February 26 (Sat.).—British Railways, Southern Region, Lecture & Debating Society; visit to western extension of London Transport Central Line.

February 26 (Sat.).—Permanent Way Institution, Manchester & Liverpool Section, at Manchester Corporation Gas Department Show Rooms, Mount Street, at 2.30 p.m. Film: "The Permanent Way Institution."

February 28 (Mon.).—Institute of Traffic Administration, Tyneside & District Centre, in the County Hotel, Neville Street, Newcastle, at 7 p.m. "Town Planning in Relation to Municipal Passenger Transport," by Mr. H. Heslop.

March 1 (Tue.).—Railway Students' Association, London School of Economics & Political Science. Association Dinner at Charing Cross Hotel, London; Reception at 6.30 p.m. by the President, Sir Cyril Hurcomb, Chairman of the British Transport Commission.

March 2 (Wed.).—Institution of Railway Signal Engineers, at the Works of the Westinghouse Brake & Signal Co. Ltd., Chippenham, Wilts., at 5.45 p.m. "Servicing of Railway Signalling Equipment," by Mr. E. E. Pierce.

March 2 (Wed.).—Belfast Association of Engineers. "Diesel Traction," by Mr. Brian Reed.

March 2 (Wed.).—Institute of Traffic Administration, London Centre, at Caxton Hall, S.W.1, at 7 p.m. "Can Britain Finance Big Transport Developments," by Mr. Christopher Hollis.

March 3 (Thu.).—York Locomotive Society, in the Railway Institute, York, at 6.45 p.m. Members Request Night.

March 3 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Clerks' Dining Club, Bishops' Bridge Road, Paddington, at 5.45 p.m. "The Work of the British Transport Commission," by Mr. Miles Beevor, Chief Secretary & Legal Adviser, British Transport Commission.

March 3 (Thu.).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. "Electric and Diesel-Electric Traction on the Netherlands Railways," by Mr. H. J. van Lessen.

Railway Stock Market

Stock markets, although firmer, attracted little business, caution prevailing owing to the international situation and a tendency to await a rally by Wall Street. Commodity and base metal shares have made little recovery. Industrials were inclined to strengthen, however, in the hope that Sir Stafford Cripps may agree to certain modifications of dividend limitation. A statement from the F.B.I. is expected to be made shortly.

British Funds remained the firmest section of the markets. The assumption is growing that although the Budget is unlikely to bring any appreciable relief from taxation, it will in other respects prove a "bull" point for British Funds, followed, on May 1, by the appearance of the £200 million of Gas stock, which, it is assumed, will be longer-dated than existing nationalisation stocks. This might well mean higher prices for the latter. At the moment chief market interest attaches to Transport ("Wagon") stock (1968-73) now that forward dealings have been granted in the Thomas Tilling portion of this. There is not expected to be a great deal of selling although some big holders may exchange into British Electric Traction deferred stock.

Business in foreign rails has been on a limited scale. Great Western of Brazil shares have come back to 108s. 9d., and there was selling of Leopoldina, the ordinary easing to 9 and the preference to 32½, while the 4 per cent. debentures were 84 and the 6½ per cent. debentures 104. Leopoldina Terminal 5 per cent. debentures were 82 and the £1 ordinary 1s. 6d. San Paulo eased to 154½ and Central Uruguay ordinary was steady at 12. Antofagasta eased to 9½ and the preference was 58½. Beira Railway bearer shares have been steady at 46s. 6d. After rising on the maintained dividend Canadian Pacifics showed a partial reaction to \$21½. Manila

"A" debentures were 87½ and the preference shares 8s. 10½d. United of Havana 1906 debentures were dealt in around 13. French railway sterling bonds were inclined to strengthen and Orleans 4 per cent. were 92. B.A. Central debentures marked 39½ and La Guaira Caracas 5 per cent. debentures 66.

There have been active dealings in Tilling's in their "ex all" form, but, after touching 30s., profit taking brought a reaction to 28s. 3d., the balance sheet suggesting that it may not be possible in future for the company in its new form to maintain the dividend at 10 per cent. Scottish Motor Traction strengthened to 106s. 3d. B.E.T. stock was favoured and rallied to £1.855.

Iron and steel shares remained one of the steadiest sections with Sheepbridge good at 66s. 6d., and the market hopes that other companies who segregate their non-steel assets may also be granted a nationalisation reprieve for these sections. A reference to the position of Hadfields is expected shortly.

Shares of locomotive builders and engineers recorded only small movements. Vulcans were 26s., North British Locomotive 22s. 6d., and Beyer Peacock 23s. 9d., while Gloucester Wagon at 58s. 9d. failed to recover from their recent reaction. With dividend limitation almost certain for another year, hopes of higher dividends from locomotive engineers and allied companies will have to be deferred, although in many cases it is hoped that financial results will show a further increase in profits. Charles Roberts have held firm at £7½ on capital return prospects, and Wagon Repairs 5s. shares were 21s. 4½d. Tube Investments firmed up to £6½. Tarmac rose to 73s. 9d. in anticipation of good financial results and news of the position in regard to compensation for railway wagons. Clarke Chapman at 56s. 3d. have responded to the good profit increase for the past year.

Traffic Table of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date	
				Total this year	inc. or dec. compared with 1947/48		Total	Increase or decrease
							1948-9	
South & Central America	Antofagasta...	811	13.2.49	£ 65,470	+ 24,800	6	£ 449,510	+ 106,550
	Bolivar ...	174	July, 1948	\$28,960	- \$69,357	30	\$471,287	- \$301,893
	Brazil ...	...	...	...	...	...	...	...
	Cent. Uruguay ...	970	6.11.48	32,712	+ 2,978	18	593,105	- 7,652
	Costa Rica ...	281	31.1.49	35,772	- 3,648	31	250,009	+ 12,870
	Dorada ...	70	Dec., 1948	32,515	+ 6,915	52	338,423	- 12,377
	G.W. of Brazil ...	1,040	12.2.49	42,400	+ 8,000	6	255,600	- 7,200
	Inter. Ctl. Amer. ...	794	Dec., 1948	\$1,168,700	+ \$45,700	52	\$13,333,950	+ \$257,513
	La Guaira ...	224	Jan., 1949	\$110,295	+ \$32,218	4	\$110,295	+ \$32,218
	Leopoldina ...	1,920	12.2.49	48,747	- 7,579	6	298,259	- 69,151
	Midland Uruguay ...	319	Sept., 1948	19,608	+ 3,123	12	67,355	+ 16,721
	Nitrato ...	382	15.2.49	16,886	+ 7,133	7	47,139	+ 14,283
	N.W. of Uruguay ...	113	Sept., 1948	5,686	- 1,213	12	16,335	+ 1,989
	Paraguay Cent. ...	274	11.2.49	£124,479	+ £58,399	32	£3,359,730	+ £1,246,632
	Peru Corp. ...	1,059	Jan., 1949	223,166	+ 42,592	31	1,383,296	+ 176,604
	Salvador ...	100	31.12.48	c267,000	+ c16,000	26	c776,000	+ c53,400
	Canada	San Paulo ...	153½
Talca ...		156	Jan., 1949	9,915	+ 1,045	31	57,335	+ 7,725
United of Havana ...		1,301	12.2.49	\$435,124	- \$106,680	32	\$7,277,279	- \$2,821,486
Uruguay Northern		73	Sept., 1948	1,072	+ 52	12	3,308	+ 111
Various	Canadian National...	23,473	Dec., 1948	11,254,987	+ 1,630,242	52	122,817,487	+ 13,267,992
	Canadian Pacific ...	17,037	Dec., 1948	7,769,250	+ 618,000	52	88,812,250	+ 9,165,750
	Barsi Light*	202	31.1.49	25,642	+ 2,497	44	272,310	+ 22,852
	Beira ...	204	Nov., 1948	128,810	+ 18,938	9	255,148	+ 29,260
	Egyptian Delta ...	607	31.12.48	23,691	+ 769	39	556,626	+ 109,817
	Gold Coast ...	536	Dec., 1948	253,671	+ 50,133	39	1,902,032	+ 510,000
	Manila ...	...	...	...	...	...	...	...
	Mid. of W. Australia	277	Dec., 1948	32,105	+ 4,664	26	175,849	+ 40,349
	Nigeria ...	1,900	Nov., 1948	495,323	+ 70,029	33	3,647,496	+ 716,766
	Rhodesia ...	2,445	Sept., 1947	643,980	+ 102,833	52	6,787,603	+ 612,938
	South Africa ...	13,347	29.1.49	1,405,312	+ 99,506	44	58,523,214	+ 3,593,220
	Victoria ...	4,774	Oct., 1948	1,412,748	+ 36,618	18	...	...

*Receipts are calculated @ 1s. 6d. to the rupee